

Transmission Siting and Permitting

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Introduction

In order to construct new transmission facilities or to significantly upgrade existing facilities in the U.S. electricity system, developers typically need approval from several state and federal agencies. This process has, in recent years, become protracted and difficult. The difficulty is hardly surprising given that transmission facilities are highly visible structures that may span long distances and must somehow fit into physical surroundings that are already in use for other purposes. Incorporating these facilities into the landscape and taking fair account of the wide range of legitimate interests affected by them is challenging.

Nevertheless, many observers and participants in the electricity sector now regard transmission siting and permitting procedures as a major reason why the development of new transmission facilities is not keeping up with the need. Critics say that the siting and permitting process has become unnecessarily cumbersome, delay prone, and subject to breakdown. Some observers argue that current state-based regime for managing siting and permitting is not well adapted to the review of proposed large-scale multistate transmission projects that are or may soon be needed to serve regional bulk power markets, perhaps with little benefit to local electricity consumers. Other officials familiar with state processes agree that regulatory processes can and should be improved, while noting that there is also potential to improve the siting and planning practices of transmission owners or other applicants for proposed new facilities.

Given the vital importance of the transmission network, it is essential to the national interest that transmission siting and permitting procedures work for society in practical terms. That is, these procedures must lead to timely decisions by appropriate agencies about whether proposed facilities would serve the public interest, and to timely approval of routes or sites for facilities that are deemed necessary. This paper examines current siting and permitting practices and ways to improve them. Specifically, the paper:

- Examines existing government and industry practices related to siting and permitting,

- Identifies key or frequent problems with these practices,
- Identifies policy options that should be considered to resolve these problems, and
- Discusses objectively some of the advantages and disadvantages of the options, so they can be considered by federal and state policy makers, corporate officials, and the public.

The policy options discussed fall into three categories:

- Creating new regional institutions to facilitate transmission siting and permitting, either for all new transmission facilities or for large or critically important facilities;
- Improving the current state-based governance regime;
- Making siting-related practices by industry and government agencies more effective, regardless of governance structure.

The remainder of this paper is divided into six sections:

- An assessment of the existing state-based siting regime.
- A discussion of transmission siting from a regional perspective, the reasoning that has led to increased interest in establishing regional institutions for siting new transmission facilities, and the options for designing these institutions.
- Issues related to defining “regional transmission facilities.” Some such definition would be useful for determining which new facilities would be subject to the jurisdiction of regional siting institutions.
- Options for improving the existing state-based siting regime.
- Options that could be pursued under any governance structure to improve siting-related practices by government agencies and industry.
- Summary and conclusions.

Assessment of Current Siting Regime

The North American electricity grid is a monumental feat of imagination, planning, and engineering. The grid links generators to cities; cities are linked together and with rural areas; and many electricity suppliers are made accessible to users. Networking delivers a very high standard of reliability at reasonable cost, and the U.S. economy depends heavily upon this high level of reliability. Some government authority approved construction of most of the power lines that make up the grid.

Siting transmission lines is understandably difficult, involving complex engineering, social, and land use considerations. As aggregate electricity usage in an area grows, reliability tends to degrade unless the transmission network is strengthened. There are often many ways to meet a need for grid enhancement, and

choosing a good solution is likely to involve tradeoffs among many factors, including cost. Arriving at good solutions often requires long lead times and the development and implementation of a flexible long-term plan for optimizing the transmission grid and related facilities.

Utilities, whether publicly or privately owned, involve a mixture of public and private interests. One of their roles is to bring forward proposals to meet transmission grid needs and implement these proposals if they are approved by government agencies. Consumers rely on government agencies to select the transmission proposals that are most likely to have value well in excess of their cost over the working life of the investment. Because the future is uncertain and reliance on forecasts is unavoidable, the selection process will not always result in the best decisions. However, the goal is that the system used for siting electric transmission lines will produce timely, high-quality decisions in most cases.

Siting electric transmission lines is currently a state responsibility.¹ Each state may address transmission siting in its laws, and most have done so. In a few states, utilities are required only to give notice of intent to build a transmission line; after a specified period, if no challenges are raised, the utility may proceed with acquisition of right of way (if needed) and construction. In most states, however, the utility must demonstrate to a siting authority that the proposed facility is needed, and the siting authority must confirm that construction of the facility will serve the public interest.

Most power lines are proposed in states that have formal siting authorities. Some transmission proposals are withdrawn after supporting evidence is assessed during the siting process. A few proposals make it all the way to a decision by the siting authority and are then rejected. Rejections represent failures of analysis and communication somewhere in the planning and siting processes, and they are costly to all parties, including the public. The objective of the subsections below is to examine the existing siting process and analyze some of its successes and failures.

Description of the Transmission Siting Process

A utility typically files a siting proposal when it feels that there is justifiable need for additional transmission capacity and that the proposed solution is robust. In most states, the proposal goes to a siting authority, most often the regulatory utility commission. A significant number of states have a separate siting authority that may include officials from other affected state agencies.

Usually, the process is a “contested case,” which means that the decision will be based on evidence presented by the applicant and other parties. Parties (“intervenor”) may intervene in the case either by right (e.g., the state public advocate) or by permission if they demonstrate to the siting authority that a distinct interest is at stake that is not otherwise sufficiently represented. The utility decides when the process starts and controls most of the relevant information. Sometimes, intervenors fill gaps in the information provided by the utility.

In some states, a specific amount of time is allotted for reviewing a transmission siting proposal. The time limit may be reached or even exceeded in complex cases or cases that involve much procedural maneuvering; this may trigger a rejection of the proposal by the siting authority on procedural grounds. Other states have no spe-

¹With the exception of the federal power marketing administrations and the Tennessee Valley Authority, which have their own siting authorities.

cific time limit. Still other states, in order to reduce utility incentives to hold back details about a proposal, allow a time limit to be activated only after a finding by the siting authority that the application is complete.

In some states, the process focuses on the proposal under consideration rather than on how best to address a grid need. In these cases, a rejection may not be accompanied by guidance about how to address better the need that the original proposal was intended to meet. The prospective lack of such guidance and the desire to avoid rejection may motivate some parties to work during the case to improve the project after filing, based on evidence and arguments during discovery and hearings.²

Electricity consumers pay for transmission facilities through their electricity bills.³ Consumers depend on regulators to allow the incorporation into electricity rates only the costs related to transmission facilities required to serve their area's long-term needs. Transmission costs represent approximately 10% of the nation's total electric bill.⁴

An environmental assessment is often required for a transmission proposal. Environmental issues of interest include:

- Concern about opening new areas to development—for example, roads may be needed for access to maintain lines, and development may follow roads;
- Potential disruption of habitat by reducing the size of continuous undeveloped spaces;
- Potential impacts on endangered species; and
- Visible impacts that may create aesthetic concerns, especially in scenic areas.

In most states, the utility must apply for and obtain a “certificate of public need” (the name of this document varies from state to state) for a transmission facility. This certificate is extremely important; it indicates that the designated government authorities have reviewed the proposed project, evaluated the tradeoffs involved, and concluded that, overall, the project is in the public interest even though some legitimate private or public interests may be adversely affected.

The formal criteria for determining “need”⁵ vary. Some commonly used criteria are

- Someone is willing to invest in the project (in other words, the project is perceived to have significant marketable value).
- The project is needed to maintain the reliability of the bulk power supply system.⁶

²An iterative process has its merits but exposes intervenors to the risk of having to evaluate an essentially new proposal in the midst of the process. The siting authority must “manage the clock” to ensure that everyone is treated fairly.

³Merchant transmission costs find their way into retail prices though by a different path than regulated transmission rates.

⁴DOE. 2002. *National Transmission Grid Study*. U.S. Department of Energy.

⁵There is no practice or mechanism for determining regional or interstate need. The Electric Reliability Council of Texas (ERCOT) performs this function in a way that some expect will become typical for Regional Transmission Organizations (RTOs)—providing unbiased and competent information to clarify and focus the work of individual utilities on addressing validated needs.

- The project is needed for regional electricity commerce.⁷
- The project is needed to interconnect an approved generator to the grid.⁸

In many states, decision makers must consider alternatives to the primary proposal. Some states have specific instructions concerning alternatives that the utility must present. Siting authorities are typically interested in route and non-transmission alternatives when these are relevant.⁹

Substitutability of Transmission and Nontransmission Resources

There are many substitutable ways to meet customer needs for delivery of energy. Here are two examples:

1. Consider a community that has experienced significant customer demand growth and has been relying on generation located outside the area but delivered to customers by wires that are beginning to reach capacity limits. In this case, the capacity of the lines could be increased, or generation could be added within the community to reduce the need for imports. Alternatively, customers could reduce their demand on the grid, either by using energy more efficiently or by making their own electricity. Deploying several approaches may avoid overreliance on any one. Examples of these alternative approaches are being deployed now in New York City for the explicit purpose of improving electricity system reliability.
2. Consider a market in which a transmission constraint leads to energy clearing prices that differ by two cents between the two sides of the bottleneck in many hours. Possible solutions include adding transfer capacity to allow the low-cost resources on one side of the constraint to flow freely to the other side. Or it might be possible to add lower-cost resources in the region where energy prices are higher. A third alternative would be to reduce demand in the region where power is more expensive if a reduction would mean avoiding use of the most expensive generation resources. An example of adding resources in the region where power is more expensive appears to be unfolding in Pennsylvania where differences between eastern and western prices are moderating because natural-gas-fired generation has been added in the east.

In both examples, structural improvements, such as more functional markets and better pricing regimes, are contributing to the resolution of problems that might once have been solved by transmission facilities alone. These alternatives should be considered during an investment planning cycle prior to and again during permitting so that the public can see and appreciate the decision-making process.

⁶Demonstrating this particular need requires competence in either deterministic or probabilistic transmission planning models as explained briefly in Section 6. Using just one approach leaves the applicant vulnerable to challenge.

⁷For some states, serving regional commerce is a vital purpose of the grid. For others, it is secondary to maintaining reliability.

⁸One commenter at the public workshops organized for the National Transmission Grid Study (NTGS) by the U.S. Department of Energy suggested that inadequate attention is being given to transmission needs associated with bringing some new generation on line. If this is true, a need buildup may be accumulating that could result in belated justification for new power lines in some areas.

⁹Texas requires submittal of alternative route options as well as analysis of the usefulness of demand-side management and distributed generation in lieu of new lines.

The cost to prepare a transmission proposal and support it through the siting process is significant and can vary depending on the complexity of the project and degree of public concern.¹⁰ Regulated companies expect that federal and state supervised rates will recover the cost of the project plus a reasonable return. Merchant transmission companies rely on a business plan that forecasts sufficient revenues from the sale of transmission services to cover their costs and provide an acceptable return on invested capital. Their charges are also eventually reflected in retail electric prices.

A crucial and volatile factor in the transmission siting process is the public trust. It is extremely important that the managers of the process and other major parties act in specific cases so as to gain and keep the public's confidence that the siting process will generally lead to sound outcomes that serve the many public interests at issue.

Due Process in Transmission Siting

Due process is an important element in the American judicial system, including the transmission siting process. By means of due process rules, the regulatory agency that manages the process balances the interests of many parties, including potential intervenors who need a sufficient opportunity to review and critique the particulars of a proposed transmission project, the utility that is charged with providing reliable service at just and reasonable rates, and consumers.

The first element of due process is notice. Parties who may be affected by a project have a legal right to hear about it sufficiently in advance to make a reasoned response if they choose. When a project affects many communities, notice must be provided so that all communities are informed.¹¹

A complete filing is also a necessary element of due process. Potential intervenors need full information about the project, presented in non-technical terms. Information provided by utilities may be incomplete. Regardless of the history or regulatory time limits on the case, filing of incomplete applications or withholding of relevant information puts the proposed project at risk, and may create mistrust, conflict, delay, and/or result in outright rejection of the proposal.

Another key element of due process is the determination of which parties are allowed to participate. The state is usually represented, and any relevant point of view not adequately represented by others is generally allowed. Those designated as "parties" to the case receive all information submitted to the siting authority by any other party and have the opportunity to ask and be asked discovery questions and to put on and cross-examine witnesses. Typically, parties pay their own costs. Low-budget participation is possible, but expert advice is expensive, which limits the participation of some intervenors.¹²

¹⁰In September 1995, the Florida Public Service Commission (PSC) voted to allow Florida Power to recover \$23 million in costs spent on a proposed 500-kV line that was never built. The line was approved by the PSC in 1984 for reliability. However, continued local opposition led to protracted and costly litigation. Florida Power eventually developed an alternative plan involving more intensive monitoring of the status of key transmission lines in the area, interruption of service to a limited number of customers in emergency situations if necessary, and reactivation of a 115-kV line that had earlier been retired from service. (*Electric Utility Week*, 1995.)

¹¹This concern is spoofed in *The Hitchhiker's Guide to the Galaxy*, by Douglas Adams, in which notice to demolish the Earth was posted at Alpha Centauri.

¹²Some of the most tenacious non-government intervenors have wealthy benefactors or pro bono advocates. In rare cases, states provide funding, usually assessed from the applicant, for intervenors.

“Discovery” is the process of insuring that all relevant facts are available to all parties before hearings. Because utilities possess most of the information relevant to transmission proposals, they usually have a greater discovery burden—that is, they must distribute to others all relevant information. In some cases, however, other parties present competing alternatives and thus become subject to major discovery burdens.

Conflicts may result if some information essential to understanding the need for or the design of a project is declared to be confidential to protect allegedly proprietary details. A simple solution is an agreement that allows all parties to see the information but requires that they use it only for the purpose of the case. Even with such an agreement, disputes may persist since the information may be important to enable the public to understand the need for the project, and there is no practical way to include the public in a protective agreement. In addition, there may be lingering disagreement on how proprietary the information is in the first place. In many jurisdictions, applicants face no formal penalty if they withhold information as a strategy to divert attention or delay review of the proposal; however, an applicant who withholds information risks losing the trust and goodwill of regulators and the public.

Siting authorities usually allow public comment, and many are required by law to do so. Some states require that comments be solicited in person in each affected county. For a long transmission line, many counties could be affected. Public comments are not usually used as evidence because statements are not cross-examined; however, these comments may influence the atmosphere in which the decision makers deliberate.

Technical hearings are the forum through which the siting authority collects evidence. These hearings are sometimes held before staff or hearing examiners or directly before the siting authority. Parties to these hearings can produce witnesses, and all parties can cross-examine all witnesses.

It is important that all parties understand in advance the standards for approval of a transmission proposal. These standards should be provided by the siting authority with citations of appropriate statutes, regulations, and precedents. Sometimes an issue emerges for which there is no precedent, and parties may want to know at an early stage in the case how the authority will evaluate this issue. After the siting authority issues its findings and orders, there is usually an opportunity to appeal. State courts vary in their ability to process such appeals quickly.

Key Difficulties in the Current Transmission Siting Process

Why don't utility proposals for new transmission facilities get routinely approved within a “reasonable” time period? In fact, most smaller projects or upgrades of existing facilities are approved, often in less than a year. Notice and hearing requirements take up the bulk of the time in such cases. However, some proposals do not go smoothly, as discussed in the rest of this subsection.

Significant difficulties arise when a proposal is perceived by key parties to be inconsistent with important public interests. These interests may include costs as well as impacts on electric rates, the environment, property rights, protected federal land, or other sensitive land. Often, critical disagreements are about how certain tradeoffs should be evaluated and resolved. Sometimes, a conflict is the result of a party's conscious decision

to be uncompromising for reasons of principle or strategy. Disputes may arise about whether certain questions have been sufficiently answered or whether parties will have access to certain information and on what terms.¹³

Major delays occur if the siting authority finds that an applicant failed to examine and present relevant alternatives, a task that entails significant effort. If more than one state is involved, the states may disagree over the proposed distribution of the societal benefits and costs associated with the line.

A bias is introduced in the weighing of alternatives if different approval venues, processes, or compensation methods are used for different options. For example, if the siting authority is not the regulatory commission, the authority may not have sufficient experience in demand-side measures to determine whether they may be superior to a power line as a means of meeting a system need. Introducing competition to the wholesale generation market has added another dimension of difficulty. Investments in generation, transmission, and demand-side measures come in regulated and competitive forms and pass through different channels for approval, so there is no single standard for comparing them, and there may be no formal opportunity for a side-by-side evaluation.

Two Instructive Transmission Siting Cases

American Electric Power's 765-kV project between West Virginia and Virginia

The painfully long, complex, controversial, and costly review of an American Electric Power (AEP) transmission project in West Virginia and Virginia is often cited as a definitive example of a dysfunctional transmission siting process. The major parties are the applicant, two states, and three federal land management agencies. After ten years of review, this project is still at least a year from final approval.

AEP first proposed the 765-kV project in 1991 to Virginia, West Virginia, the U.S. Forest Service, the National Park Service, and the U.S. Army Corps of Engineers. As initially proposed, the project's primary purpose was to maintain reliability in southern West Virginia and southwestern Virginia, and a secondary purpose was to reduce the risks of a cascading outage that could affect many states in the eastern United States. The project would have involved construction of a new line about 113 miles long from an AEP substation in Wyoming County, West Virginia, to an AEP substation near Cloverdale, Virginia. Possible impacts on populated areas made the project controversial in both states, and both states held very extensive local hearings. In addition, the Forest Service issued a draft environmental impact statement in 1996 in which it recommended that the line not be constructed as proposed because it would cross sensitive areas of the Jefferson National Forest, the Appalachian Trail, and the New River.

In October 1997, AEP proposed an alternative route to the regulatory commissions in the two states. This route was about 17 miles longer than the earlier route, and the most important change was that it would go south from the Wyoming area of West Virginia before turning east, enabling the line to cross the New River

¹³There are many examples. In Illinois, a transmission project was approved only after the utility produced information requested by the commission staff; the staff had recommended that the project be denied because the information offered at the outset was inadequate. Illinois Commerce Commission Docket 92-0121 (P.R. Buxton, Personal communication).

in a less sensitive area. Several other changes were made to put the line behind ridges and to cross rivers and important natural areas at locations with lesser impacts. In June 1998, the West Virginia Public Service Commission approved its 32-mile portion of the line.

In September 1998, however, AEP agreed to a request from the staff of the Virginia Corporation Commission that the utility conduct a detailed study of an alternative route that would follow much the same path as before in West Virginia but would terminate in Virginia at an AEP substation near Jacksons Ferry. The Virginia Commission also engaged a consulting firm to prepare an independent evaluation of the route to Jacksons Ferry. After completing its review, AEP agreed that the Jacksons Ferry route was acceptable although it would not allow as much margin for future load growth as the route to Cloverdale.

In May 2001, the Virginia Corporation Commission approved the Jacksons Ferry route, chiefly because it would have fewer adverse environmental and social impacts than the route to Cloverdale. The West Virginia Public Service Commission must now review the route ending at Jacksons Ferry, even though the West Virginia portion of the route remains essentially unchanged from that which the commission approved in June 1998. In addition, the new route would cross about 11 miles of national forest in an area not studied in the Forest Service's 1996 draft environmental impact statement, so the Forest Service must do a supplementary analysis and decide whether to grant a permit for construction of the line.

The siting process for this project might have been accelerated if there had been:

- Greater coordination and cooperation among the five reviewing agencies (West Virginia, Virginia, and the three federal agencies). A significant source of delay in the earlier stages of the process was that each state commission tended to favor a route that would reduce adverse environmental and social impacts within its own state without regard for the possibility of adverse impacts in the other state.
- Presentation by AEP of a wider range of alternatives at an early stage in the process.
- Better communication between the Forest Service and the applicant. The Forest Service and the applicant could have focused earlier on the acceptability of several alternative routes across national forest lands.
- More emphasis on the “regional picture” through involvement of a regional siting institution. Because a major purpose of the line is to reduce the risk of a cascading multistate outage, this project has regional significance. The regulatory process, however, has involved only two states, and their proceedings have focused primarily on intrastate concerns.

The Cross Sound Connector

Another project, the Cross Sound Connector, illustrates the problems of focusing on a single route and also shows some additional difficulties typical of interstate projects. TransEnergie US, Ltd proposed the project in the summer of 2000. It would connect the Long Island Power Authority's Shoreham substation with a United Illuminating substation in New Haven, Connecticut, by means of a buried 26-mile undersea cable. The project has two principal purposes: to improve reliability on Long Island and in Connecticut, and to enable Long Island to import generation from New England. The project obtained required approval from

New York officials but was rejected in April 2001 by the Connecticut Siting Council, less than a year after it was proposed.

Two reasons were cited for the rejection. The primary reason was risk to valuable shellfish beds in Long Island Sound near the Connecticut end of the project. A secondary concern was that the allocation of benefits from the project between New York and Connecticut was not equitable in comparison to the burdens involved. In August 2001, TransEnergie repropoed the project with a new route that would avoid the shellfish beds at some additional cost. Because the first proposal was rejected without prejudice, the revised proposal was filed as a new application in Connecticut, and went through the full review process. The Connecticut Siting council approved the project on January 3, 2002. However, some critics of the project announced their intention to challenge the Council's decision in court.

This case highlights that before filing a formal proposal, an applicant should probe thoroughly for sensitive issues that may be raised by its proposal and the likely impacts of alternative routes. The case also demonstrates the need for states involved in the review of interstate projects to coordinate their reviews and agree on findings regarding the allocation of costs and benefits. (These topics are discussed below in the Regional Perspective section.)

Successes in Siting Transmission

Most transmission siting proposals eventually receive certificates of need. With sustained effort, utilities, state regulators, public advocates, communities, and intervenors usually find answers to problems. A successful review process for a large interstate transmission project is described below.

A recent four-state transmission siting success story

In September 1998, New Century Energies (a company formed by the merger of Southwestern Public Service and Public Service of Colorado and subsequently merged into Xcel Energy) affirmed its intent to build a 300-mile, 345-kV line that would connect a Southwestern substation near Amarillo, Texas, with a substation near Lamar, Colorado, that is partially owned by Public Service of Colorado. From Amarillo, the line would cross the Oklahoma panhandle, continue north to Holcomb station near Garden City, Kansas, and then west to Lamar. The terminus at Lamar was to be a 210-MW high voltage DC interchange facility that would permit asynchronous flows between the eastern and western U.S. grids. The purposes of the project were to improve reliability and stabilize power flows in the region and to facilitate electricity trade. To address potential market power concerns associated with the company merger, Texas regulators required New Century Energies to pursue this project. In July 2001, Xcel Energy obtained the consent from the last of the four states when the Colorado Public Utilities Commission approved the project.

The interest of Texas regulators in this project only partly explains the project's success. Other reasons were the applicant's proactive anticipation of and responsiveness to landowner and community concerns, and the awareness by Kansas regulatory officials of the regional implications of the project and the potentially reciprocal responsibilities of a state faced with a project of principal benefit to neighboring states.

Critical Elements of Success and Conditions that May Lead to Conflict

A review of many siting proposals reveals some indicators of probable success as well as conditions that increase the risk of conflict.

Success indicators

- Link to a generation project—A transmission project that interconnects a needed generation project to the grid is less likely than other types of projects to encounter heavy opposition. The transmission component may be seen as incidental to the generation project.
- Early planning—If interested parties are informed ahead of time that a power line may be needed and will probably be proposed, the project has a greater likelihood of success. In some cases the proposal that is ultimately put before siting authorities differs from that which had initially been presented to the public for review, indicating that the public review was of value.
- Open planning—A planning process is considered “open” or “transparent” when it solicits the views of interested parties regarding ways to address a specific transmission need. Parties other than utilities are more likely to feel that such a process has respected their interests; it also gives the utility the opportunity to make changes to a plan before committing to it as a formal proposal.
- Regional planning—The major benefits from interstate transmission projects are often unevenly distributed. When out-of-state benefits can be recognized in a state’s siting process, effective presentation of these benefits is an important indicator of success. Special arrangements may be needed to ensure that a project will provide net benefits to all affected states.
- Demonstrable need—A project appears more compelling as its value to consumers is more evident. The need to maintain reliability is widely accepted although demonstrating that a specific project is needed to strengthen the system can be difficult. The need to interconnect a permitted generator to the grid is usually obvious. In some states, there is debate about the “need” for projects that primarily facilitate electricity trade.
- Economic benefits—If regional energy transfers are clearly in the public interest, a proposed project that enables such transfers will likely be received positively. In some jurisdictions, applying this rationale to power lines is relatively new and results from the increasing importance of wholesale electricity trade. There is debate about whether a proposed transmission line that primarily facilitates electricity trade and reduces electricity costs for some consumers is “needed” (see Regional Perspective section for further discussion). In some jurisdictions, “need” is interpreted narrowly as referring only to reliability.
- Alternatives, presented objectively—Presenting a broad range of relevant alternatives is important. Some states require that alternatives accompany the primary siting proposal, and intervenors and public advocates may develop them if the utility does not. Regardless of

regulatory requirements, an objective presentation of alternatives advances the credibility of the applicant and the primary proposal.

- Open lands—If there are few objections to the transmission line route on the basis of natural resource concerns, the odds of a project’s success improve, particularly as open land area shrinks in many states with the growth of cities. (Restrictions on the use of much government land limits its value for transmission siting.)

Characteristics of transmission siting proposals/processes that may lead to conflict

- Disregard for directives in law or siting authority pronouncements—Probably the worst thing that a transmission project applicant can do is disregard clear instructions from the siting authority or statute. Although this may seem unlikely, it happens more often than might be expected.
- Differing assumptions about land use—State officials may view proposed land use tradeoffs in ways that differ from utility expectations. An open utility transmission planning process can reveal potential misunderstandings of this kind before they disrupt or derail a mature proposal.
- Potential for disagreements with federal land managers—Difficulties sometimes arise when the interests of one or more federal land management agencies are affected by a proposal. Land managers may not regard accommodating transmission line proposals as a high priority. Different federal land managers within a region may not coordinate well with the state siting process or with each other, even within a single federal department. Federal land managers sometimes decide not to commit resources to participate in the planning of a transmission project (or ignore the process, which has the same result), choosing to participate only after the process is well under way, compromises have been made by others, and the range of options under consideration has been narrowed. Some projects affect the interests of several federal agencies, and some parties cite insufficient coordination among them in reviewing such projects as a problem. (Note: There are also cases in which these managers have cooperated well with each other and with state siting officials.)

Business Uncertainties and the Current Siting Process

The business aspects of the current transmission siting process merit attention. The ongoing restructuring of the U.S. electricity industry poses many uncertainties for the transmission component of the industry. Some companies do not know whether they will remain in the transmission business, and those that intend to stay in the business are unsure what rules will determine the profitability of new transmission investments. There is also uncertainty about how market participants will gain access to transmission facilities, and receive allocations of scarce transmission capacity. The outcomes of these federal legislative and regulatory debates will create winners and losers, and the debates are a consuming preoccupation for participants at all levels of the electric industry.

Some parties believe that many meritorious transmission projects never make it out of the utility board room

and into the permitting process. It is unclear whether this is because of uncertainty about whether revenues will cover the cost of the facility, skewed incentives resulting from unsound transmission pricing, fear of the siting process, faulty project development, concern for predatory effects on profits from other utility investments (i.e., generation), other reasons such as local politics, or some combination of influences. The cost of the siting process weighed against the odds of success is understandably important. It is equally important, however, to remember that, in every part of the United States, there is an entity obliged to deliver electricity reliably and at a just and reasonable rate. This obligation does not account for business risk though first principles of regulation call for utilities to be treated fairly by being given the opportunity to collect adequate revenues for their service. These entities must continue to try to build the facilities they believe are needed.

The Regional Perspective

Since the 1970s, electricity providers have increasingly used the nation's transmission networks for electricity trade as well as for the traditional purpose of ensuring the reliability of bulk power supplies. During the past decade, electricity trade has increased very sharply, to the point that congestion is now frequent in many locations and economically desirable trades must often be foregone to avoid loading the transmission lines beyond prudent limits.¹⁴ In addition, as the aggregate economic value of the trade enabled by the grids increases, the trade function becomes increasingly important, and the two functions of maintaining reliability and enabling trade tend to converge. From the perspectives of transmission planning and operations, the overall goal is now to facilitate trade while maintaining reliability.

Although many states do not now take electricity trade into account when issuing permits for new transmission capacity, this may change. In general, all levels of government (federal, state, and local) have long since adopted the policy premise that additional commerce enhances productivity and serves the public interest, assuming that the prices for the goods and services involved accurately reflect real costs. Attention to the externalities or dislocations that could result from trade often leads to requirements for mitigation, and in some cases to outright rejection of proposed additions to an area's infrastructure. Further, if insufficient attention is given to adverse side effects of increased trade, the probability of misallocated or excessive investment goes up markedly. For example, excessive transmission investment could be underutilized because of electrical stability concerns, or excessive investment in local generation could cause generation to be “locked into” a region. A thoughtful assessment of alternatives, as discussed in the section “Improving Agency and Industry Practices,” on page E-31, helps to ensure the broad vision necessary to consider all aspects of additional electricity commerce in transmission planning and siting processes.

In any case, given that the policy of favoring increased trade has won broad acceptance, it seems likely that states will increasingly acknowledge the contribution of electricity commerce to the need for new transmission capacity. Given the long-term and forward-looking nature of transmission planning, planners should take into account likely future trade requirements even if some jurisdictions in their area do not now recognize trade as contributing to need. Some analysts note that the reliability benefits of transmission additions are typically distributed very broadly, and the costs of such additions are usually recovered from all con-

¹⁴New tools for managing the grid may enable operators to maintain reliability standards while reserving less transmission capacity for contingency flows. This will relieve constraints in some areas at some times.

sumers across a wide area; by contrast, the economic benefits of increased commerce may be distributed much less evenly. This means that different methods of cost allocation and recovery may be appropriate, to the extent that a project is needed to support electricity commerce.

Finally, it is apparent that, in general, the public will benefit if the geographic markets across which bulk power trade occurs and reliability is managed are large. This is because large markets tend to be more diversified than small markets, and greater diversity translates into both lower market-clearing prices and lower-cost provision of reliability. (See Issue Papers *Transmission Planning and the Need for New Capacity* by E. Hirst and B. Kirby and *Alternative Business Models for Transmission Investment and Operation* by S. Oren, G. Gross, and F. Alvarado for additional analysis.)

The importance of thinking about bulk power markets in terms of large multistate regions is widely recognized (Fox-Penner, 2001; Bailey and Eaton, 2001; Costello, 2001; O'Donnell, 2000; Stavros, 2000). However, efficient regional markets will not evolve through market transactions alone. Sustained, conscious efforts are needed to develop regional institutions that will support the functioning of such markets. In its Order No. 2000, the Federal Energy Regulatory Commission (FERC) stressed the benefits of large markets; in that and subsequent orders, FERC has emphasized the importance of forming large Regional Transmission Organizations (RTOs). RTOs may be for-profit Independent Transmission Companies (ITCs, also called TRANSCOs), nonprofit operators of transmission facilities owned by others (Independent System Operators, or ISOs), or some hybrid of the two. (For extended analysis of RTOs, see Issue Paper *Alternative Business Models for Transmission Investment and Operation* by S. Oren, G. Gross, and F. Alvarado.) In Order No. 2000, FERC sees large RTOs as essential mechanisms for achieving several transmission objectives that are very important to the public interest, including:

- Provision of nondiscriminatory transmission service to all buyers and sellers in the market area,
- Economically efficient provision of ancillary services,
- Economically efficient assurance of reliability, and
- Regional transmission planning.

Many observers now believe that transmission grids can be planned, built, maintained, and operated most efficiently from a regional perspective. In addition, many are also concerned that the existing state-based regime for siting and permitting new transmission projects may not be well suited to assessing proposals of regional importance. Some of the issues raised are

- The societal costs and benefits of a regionally important transmission project are seldom distributed evenly across the area affected. Benefits tend to be distributed broadly in the form of lower electricity prices, higher reliability, and larger sales volumes for lower-cost electricity producers. By contrast, many costs are distributed narrowly along the route of the proposed line where aesthetic vistas, real estate values, and land use patterns are likely to be negatively affected. In addition, the consumers who pay for the line through their electric bills may or may not be the same group of consumers who benefit from increased reliability

A Case of a Failure to Communicate

The siting proceedings described below for a generation and transmission project that had regional impact demonstrate how communication can go wrong among two states and a federal regulator, and how ignoring a project's regional dimensions in the early stages can cause difficulties later.

In 1989, FERC granted the city of Jackson, Ohio, a license to construct a hydro generation project on the Ohio River. AMP-Ohio, a wholesale power provider to 77 Ohio municipal utilities, joined the project as a co-developer and helped finance the project. A decision was made to site the project at Belleville, West Virginia, to take advantage of a West Virginia law that exempted municipal hydro projects from state tax. However, because the economic benefits of the Jackson project would go mostly to retail consumers served by AMP-Ohio's utility customers, controversy arose in West Virginia where it appeared that citizens would suffer environmental impacts but few economic benefits. Accordingly, the West Virginia Senate passed a bill in 1994 removing the tax exemption for the project and threatening its economic viability. Although the governor of West Virginia vetoed the bill, saying that it was unfair to treat out-of-state municipalities differently from those of West Virginia, an agreement was reached before the veto that the project sponsors would make payments to West Virginia in lieu of taxes and that the transmission line linking the hydro plant to the grid would be located entirely wholly in Ohio even though that would approximately double its length.

In 1996, Ohio regulators approved the transmission line, but Ohio Public Utilities Commission (PUC) chair Craig Glazer filed a "concurring opinion" strongly criticizing the review process and its outcome. Glazer complained that Ohio was not consulted "in a meaningful way" when AMP-Ohio negotiated its deal with the governor of West Virginia: "It is indeed disingenuous for AMP-Ohio to reach an agreement with the West Virginia governor to site the line in Ohio and only then come to Ohio and argue that any routes in West Virginia are not feasible and should not be looked at in the siting process" (*Electric Utility Week*, 1996). Glazer argued that analyses showed "far more environmentally benign and cost-effective routes through West Virginia for this line." He criticized FERC, which had approved the proposed hydro facility, saying that Ohio staff had attempted to establish a joint siting and information sharing process that "fell on deaf ears at the FERC staff level." He continued, "Given FERC's utter lack of interest in such a cooperative effort, [Ohio's] staff did not pursue more formal requests" for cooperation. He added, "This is a case study on how applicants, neighboring states, and an intervening federal agency should not act" (*ibid.*).

Although there was a good faith effort to resolve the benefit allocation issue between Ohio and West Virginia in this case, the transmission line was not considered at that time by AMP-Ohio, so the company was vulnerable later to the assertion that it had struck an unscrupulous bargain with the governor of West Virginia. PUC Chairperson Glazer noted that some of these difficulties might have been foreseen at the time of the original hydro licensing decision and could have been resolved in advance. Perhaps due in part to this case, Ohio recently adopted a streamlined, time-limited siting process that explicitly provides for cooperation with other states and agencies on siting matters.

and access to lower-cost generation.

- At least one state is legally prohibited from considering out-of-state benefits associated with projects under review (Mississippi State Code 77-3-14). This constraint could lead to rejection of regionally beneficial projects if the intrastate benefits do not appear to exceed the intrastate costs.
- Even if a state is not legally prohibited from taking out-of-state benefits into account, it may still not give these benefits full weight when assessing a project.
- Existing siting processes vary significantly from state to state. Approval may be required from federal agencies charged with the management of public lands; this is particularly frequent in the West. Permits for crossing the lands of Native American tribes may also be needed. Thus, the review process for a major interstate project is almost certain to be complex. Institutional mechanisms are needed to improve communication and coordination among the various agencies that must approve a project and to help develop common procedures and requirements to serve the needs of as many reviewing agencies as possible.

The concerns noted above regarding the adequacy of the existing state-based process for reviewing major interstate transmission proposals have led some observers to conclude that strong regional authorities are needed to organize reviews and decide about siting and permitting of projects that would have regional impacts. For example, see DOE (1998), Recommendation #25: “Explore formation of regional regulatory authorities (RRAs) to provide an institutional focus on interstate transmission enhancement needs, the avoidance of increased regulatory burdens and the replacement of multiple siting and other authorities with single regional siting authorities that are not subject to any state veto.” Note: This recommendation was not supported unanimously.

The principal counterargument expressed by organizations representing state and local government agencies is that as yet there is no compelling evidence that such far-reaching changes are needed. In September, 2001, nine state and local governmental organizations delivered a joint letter to Senator Jeff Bingaman, chairman of the Senate Energy and Natural Resources Committee, objecting to Bingaman's draft legislation that would give the FERC a backstop role and eminent domain authority with respect to siting new transmission facilities. The nine organizations were the National Governors Association (NGA), the National Conference of State Legislatures, the National Association of Regulatory Utility Commissioners, the Council of State Governments, the National Association of Counties, the National Association of Towns and Townships, the National Association of State Energy Officials, the National Association of State Utility Consumer Advocates, and the Association of State Energy Research and Technology Transfer Institutions (*Electric Utility Week*, 2001).

An examination of recent or current major transmission projects does not yield conclusive answers about whether strong new regional siting institutions are needed (as opposed to improvements to the existing state-based regime). At a minimum, however, the record confirms that new mechanisms and practices are needed to foster greater coordination, cooperation, and timeliness among states, federal agencies, and tribes that must review proposed major interstate transmission projects. Pertinent issues and policy options are discussed in the sections below.

Some Generic Considerations Regarding the Regional Approach

Before discussing various possible formats for the design of regional siting institutions, it will be helpful to address several background topics that pertain generically to the regional approach.

Relationship between generation siting and transmission siting

Generation and transmission siting are inextricably related. The placement of new generation in relation to load centers and transmission bottlenecks can increase or decrease the need for new transmission facilities. Regional or state planning and siting officials must take these effects into account.

In some areas of the country where natural gas is readily available at low cost (e.g., the Gulf Coast), generation providers have filed applications for transmission interconnections for new generation well in excess of projected load growth in the surrounding area.¹⁵ This generation would serve more distant markets, and additional transmission capacity would probably be needed to enable the generators to reach those markets. However, some parties assert that natural gas pipelines may be generally cheaper and less environmentally intrusive than electric transmission lines, and most analysts agree that new generation capacity should be built as close as practicable to the load centers it serves.

Accordingly, when a new “long line” transmission facility is proposed, opponents may argue that the facility is not needed because new generation could be built near the load center. This would probably raise an evidentiary question (i.e., one requiring formal examination) that would have to be addressed before the question of the need for the transmission facility could be resolved. Further, load centers tend to be heavily urbanized areas; they may have air quality problems; and they may lack the water supplies needed for new generation. Without a thorough assessment of these issues, decision-makers would find it difficult to answer the question of the feasibility in economic and other terms of building a sufficient quantity of new generation near the load center. The need to consider other alternatives to new transmission capacity (e.g. distributed generation)¹⁶ would broaden the analytic requirements of the process even further.

This complex of issues (the merits of local generation and other local alternatives versus distant generation plus transmission) has two significant implications:

- (1) It increases the prospects for disagreement between or among states concerning the need for new transmission capacity and suggests that states should be cautious about approving new generation capacity without inquiring whether such capacity may lead to transmission congestion and the need for new transmission capacity in neighboring states. The availability of new technologies for distributed generation and other technological substitutes for new transmission will add fuel to this debate. At a minimum, generation and transmission siting decisions increasingly require extensive communication and coordination among states across a region.

¹⁵See, for example, comments presented by a Southern Company representative at DOE’s workshop in Atlanta, September 26, 2001.

¹⁶A further difficulty is that it takes time, once a need is identified, to combine the many possible resources into a sound mitigating strategy.

- (2) It increases the need for open regional transmission planning processes that will indicate to all affected parties where and when new transmission capacity will be needed, taking into account the siting of generation and the economic cost and feasibility of alternatives to conventional transmission facilities.

Promoting common processes among reviewing agencies within a region

A regional institution could foster the development of common processes that all reviewing agencies in the region—states, Native American tribes, and federal agencies—could use to review transmission projects. The regional body could facilitate development of common application requirements and timelines, joint interagency hearings, agreements on the types of alternatives to be considered, and a single record of decision for the project (see *Conceptual Plans for Electricity Transmission in the West*, 2001). These actions could be accomplished with comparatively little infringement on the authority of the reviewing agencies.

Improving coordination of the overall process in a region

Shortly after an application for siting of an interstate or regionally significant transmission project has been filed with one or more reviewing agencies, it would be beneficial to have a joint meeting involving the applicant and all affected reviewing agencies, including federal agencies and Native American tribes, to identify possible points of difficulty or disagreement and begin exploring possible solutions. Although this meeting could be coordinated informally under the existing state-based review regime, a centralized regional organization could give the effort focused and pragmatic leadership without infringing on the authority of the reviewing agencies.

Two current and controversial transmission siting cases involving Minnesota and Wisconsin¹⁷ provide support for the view that the siting process for interstate projects could be aided significantly if a cooperative regional body were available to assist in coordinating the process, and if regional transmission plans were available to guide state agencies in considering questions related to the need for new transmission facilities. In both of these cases, the applicants contended that the lines were needed primarily to maintain reliability in Wisconsin. The need issue became a matter of debate in both cases, and resolution of it might have gone more smoothly had a well-developed regional plan been available. As of this writing, neither case is resolved.

Providing federal backstop authority

Some designs for regional institutions would give authority for siting decisions to a board composed of representatives from the affected states (and perhaps federal and tribal agencies as well). This raises the possibility of internal disagreement; that is, the regional body might be unable to reach a timely decision on whether a proposed transmission project is needed or on the acceptability of a route for the line. To deal with such cases, after a specified time period or under specified conditions,¹⁸ a federal entity could be empowered to

¹⁷These are the 38-mile line from Chisago, Minnesota, to Apple River, Wisconsin, and the roughly 230-mile line from Duluth, Minnesota, to Wausau, Wisconsin. The latter has been approved by the state siting authorities, but is the subject of an appeal in Minnesota. The former was withdrawn and is being redesigned based on the results of a mediation process.

¹⁸One possible condition would be the case of a regional transmission project proposed in a state that declines to consider regional costs and benefits.

Regional Transmission Planning and Development of Cooperative Regional Institutions

Due to the geography of the western U.S., with its comparatively long distances between cities and some of the natural resources used in generating electricity, the western states have gained extensive experience with planning and siting interstate transmission projects. Recently they have begun to develop an institutional framework under the auspices of the Western Governors' Association to aid them in dealing with shared issues related to such projects. Much of this work is being done through a body named the Committee for Regional Electric Power Cooperation (CREPC). CREPC was created in 1984 jointly by the Western Interstate Energy Board, which acts as the energy arm of the Western Governors' Association, and the Western Conference of Public Service Commissions. CREPC has representation from the regulatory commissions, energy agencies, and facility siting agencies in the 11 states and two Canadian provinces in the Western Interconnection. Through CREPC, the western states have begun negotiations to develop a common interstate transmission siting protocol, and are aiming at June 2002 as a target date for a publishable draft.

One of the roadblocks to the formation of comparable institutions in the Eastern Interconnection is the lack of a clear and urgent agenda. That is, without either well-developed regional transmission plans or a collection of actual regional-scale transmission proposals, it is not obvious which states and federal land management agencies need to be talking with each other about what issues. Rather than wait for RTOs to be established and for transmission plans to be developed by them under FERC's direction, an interim approach could be considered. DOE and the FERC could jointly identify key transmission bottlenecks, and FERC could task administrative law judges to work with appropriate parties in each bottleneck area to prepare interim transmission plans. By putting the emphasis on the power of persuasion, such a process would be non-threatening, which would help to elicit constructive responses from stakeholders. The resulting plans would probably flag some important issues affecting groups of states, and thus help to spur the formation of cooperative regional institutions.

rule on the acceptability of the project at the request of the applicant.¹⁹

The prospect that jurisdiction over a project might pass to a backstop agency after the case proceeds for a certain amount of time could motivate a voting majority of a stalemated regional body to reject the proposal as incomplete before the backstop provision tolls, perhaps in the hope that it would be resubmitted in a form that would win broader support. Further, an agency subject to backstop provisions might be more insistent on the range and detail of alternatives addressed in the initial application, to increase the odds of finding an alternative to which it could say "yes" within the time limit and/or give itself more grounds upon which to declare an application incomplete if necessary.²⁰ In the end, backstop provisions—linked to time

¹⁹There are also proposals that would allow applicants to invoke federal backstop authority if a regional entity did not exist and if a state siting agency was not able to make a timely decision about a proposed transmission project.

²⁰Note that in the case of AEP's controversial Wyoming-Cloverdale proposal, the West Virginia Public Service Commission (which must rule upon an application within 400 days or else it is automatically approved) at one point rejected AEP's application as incomplete and advised AEP not to resubmit its proposal until after the Forest Service had completed its draft environmental impact statement. Resubmitting the proposal would restart the 400-day clock, and the PSC apparently wanted the clock to start after the Forest Service had issued its impact statement.

limits keyed to a finding that the application meets a specified standard of completeness—would likely lead to the filing of more complete applications and would impose some discipline on reviewing agencies to act within predictable time periods.

Why Not Just Centralize Transmission Siting Under FERC?

There are obvious challenges in coordinating and harmonizing the views of affected states, local governments, tribal bodies, and federal agencies about proposed transmission facilities. Many observers and industry participants have asked whether it would not be better to enact federal legislation making FERC responsible for transmission siting decisions—particularly because FERC already exercises this function with respect to the siting of natural gas pipelines.

Here are some important considerations:

1. Except for areas served by TVA or the federal power marketing administrations, transmission siting is presently a matter of state responsibility. Pre-empting the states and centralizing transmission siting under a federal agency would be a major change, and it is unlikely to win broad acceptance as an appropriate solution to today's siting challenges until less radical measures have been tried and found insufficient.
2. Despite the overarching importance of maintaining the adequacy and reliability of the grid, "all transmission siting is local." Fitting a proposed facility into a landscape where the affected land areas are already used for a wide variety of legitimate purposes will never be easy. Doing this job well will always require an immense amount of information from local, state, and regional sources, as well as consultation and negotiation with and among many of these parties. Transferring transmission siting responsibility to a single federal agency could mean over-centralization, resulting in delays, hasty, or poor decisions, or all three.
3. The existing process for siting natural gas pipelines is not necessarily a model to be emulated. Critics emphasize that some pipeline siting cases have also dragged on for years, and assert that the process is not sufficiently predictable. They also complain that most events in the process take place in Washington, D.C., and argue that this imposes a substantial burden on many participants, and effectively precludes participation by others.
4. Improved coordination of federal agency reviews of transmission proposals would continue to be a major concern, even if siting responsibility were centralized at FERC. However, this problem can be addressed without centralization.
5. As indicated in many places in this report, the FERC already faces a long agenda of important and urgent matters related to establishing and maintaining effective competition in the nation's bulk power markets. Many of these matters, in practical terms, can only be addressed by FERC—there is no other credible candidate. In the case of transmission siting, however, the states still want to do the job.

A stronger but much more controversial formulation of the backstop concept that has been proposed by some in the electric industry would be to empower the applicant to appeal to the backstop agency when a reviewing agency acts within the allotted time but rejects the application. This version would be much resisted by the reviewing agencies because it makes the state process appear less important to the ultimate decision on the application. It is also unclear how this structure would actually change the nature of the review process. It might make it more difficult for a reviewer to say “no” to an applicant, knowing that the applicant could turn to the backstop agency for a second opinion, or it might tempt a reviewer to reject a controversial project anticipating that the backstop agency may be more willing to take any political heat associated with approving the project. A pernicious effect on the behavior of applicants could be the emergence, at least in some cases, of “forum shopping.” That is, some applicants could become less responsive to the concerns of the reviewing agencies and less willing to spend money to address their concerns, knowing that if they got a rejection they could turn to the backstop agency.

Over time, the criteria and standards used by the backstop agency would tend to become definitive for all reviewing agencies, perhaps making the role and powers of the backstop agency more important than the drafters of the backstop provisions had realized or intended.

Responsiveness to local concerns

A frequent criticism of the regional approach, especially if it is combined with federal backstop authority, is that a regional or federal body will not be sufficiently responsive to local concerns. To address this issue, a regional or federal body could be required to hold extensive local public hearings and weigh the concerns expressed at these hearings against regional and national ones. Historically, many regional federal entities (e.g., the Bonneville Power Administration, the Tennessee Valley Authority, regional offices of the Environmental Protection Agency) have proven to be very responsive to local concerns (sometimes to the consternation of officials in Washington, D.C.).

Should regional bodies be empowered to provide advisory opinions only?

Giving regional entities the power to counsel but not decide would have the advantage of enabling a panel of experts to provide an objective assessment of a proposed project from a regional perspective without infringing upon the reviewing agencies’ powers of decision. The reviewing agencies would be under some pressure to explain decisions not compatible with a regional body’s advisory opinion. The disadvantage of this approach is that it further complicates rather than simplifies the institutional landscape for transmission siting. Many parties are strongly opposed to adding new layers to siting procedures or electricity regulation.

Risk of jurisdictional confusion

If a regional siting body were established, states in the area would still likely retain jurisdiction for some new transmission projects, depending on the definition of “regionally significant” used to identify the projects over which the new body would have jurisdiction. If the definition relied on clear empirical criteria (e.g., “all transmission projects of 230 kV or higher”), the jurisdictional boundaries would probably be clear, but there would still be some practical difficulties with the empirical approach. (See the section “Defining ‘Regional Transmission Facilities,’” on page E-25, for further discussion.)

Risk of "forum shopping"

An applicant might deliberately design a project to fall into one jurisdictional category rather than the other, e.g., so that the body that the applicant perceived to be most favorably disposed would review the project. This might in some way disserve the public interest. As long as both reviewing bodies are reasonably well conceived and well run (and these are not trivial requirements), the public interest should be adequately served.

NEPA reviews

If a regional body with siting authority included some representatives of federal agencies, this raises the question of what level of federal involvement would trigger the requirement for an environmental assessment or environmental impact statement under the National Environmental Policy Act (NEPA). If a decision by the regional body would supplant the need for an independent review of the project by one or more federal agencies, it seems likely that the regional body would have to conduct an environmental assessment. Depending on the results of the assessment, an impact statement might be required. In general, major new transmission projects usually have significant environmental impacts; in such cases, if federal decisions are required, full environmental impact statements must be prepared.

Alternative Designs for Regional Siting Institutions

There are at least five basic designs that might be considered for regional siting institutions, and many possible hybrids among the basic models. The discussion below focuses on the principal distinctions among the five basic models and is not intended to be exhaustive.

Cooperative agreements

A cooperative agreement would establish a regional entity for the mutual convenience of participating states, tribes, or federal agencies; the participating agencies would not cede any existing authority or responsibility to the regional institution. The regional institution's functions would be limited to activities such as fostering common siting processes and requirements and improving coordination among members to streamline review of regionally significant transmission facilities. Members would probably find it useful to agree on a category of facilities that would fall under the entity's purview, and they would have to agree on how to staff and fund the institution. The parties could begin by establishing a cooperative agreement that would apply only to one specific major case and then decide on the basis of that experience whether to continue to proceed case by case or to establish a standing agreement.

Interstate compacts

An interstate compact is an agreement among or between states to establish an institution that has the power to act for all of them in a specific area. Establishing an interstate compact is a complex process, especially if more than a few states are involved. The legislature of each participating state and the U.S. Congress must approve the compact's founding agreement.

For a compact on transmission siting, many states might have to enact legislation to authorize their public

utility commissions (PUCs) to cede specific authority to the regional body or to share authority or provide guidance to the commission concerning the circumstances under which it should defer to the regional body. The founding agreement would have to define the class of transmission facilities that would be subject to the commission's jurisdiction and establish how the commission would be staffed and funded.

Agreements for compacts typically specify that the governors of the participating states will appoint the compact's commissioners. Voting representation on a compact commission tends to be controversial because of differences in the sizes of states and how to set each state's share (e.g., based on population or contribution to gross domestic product) as well as the likelihood that some states would probably be more affected by the commission's activities than others. Smaller states tend to prefer one-state, one-vote structures so as not to be overruled by larger states.

Interstate compacts have been established for many purposes, and some have been much more successful than others. They ultimately depend on cooperation and goodwill among the member states. If states are strongly at odds on an issue, a compact commission may find it difficult to solve the problem. Conceivably, a provision for federal backstop authority could be included in the founding agreement to deal with potential stalemates.

Another possible problem with the compact model in the current context is that federal agencies are not subject to interstate compacts. Cooperative agreements could be devised between a compact commission and appropriate federal agencies, but the arrangement would be comparatively informal. Another question is whether the founding agreement could be fashioned to facilitate participation by Native American tribes.

Independent regional entities

The independent regional entity model offers considerable flexibility (regional authorities have been established through federal legislation to address a wide range of problems).²¹ Affected agencies (state, tribal, or federal) would have to agree on a conceptual design for a regional authority that would accomplish their common purposes, and then appropriate federal legislation would have to be crafted and enacted to serve those purposes. This approach requires the support of most of the affected states, but it is significantly less formal than the process for establishing an interstate compact.

Presumably, a board of commissioners would head a regional authority, and the enabling statute would set the criteria for appointment to the board. One approach would be to use the siting boards that currently exist in some states as a model, with commissioners from relevant state and federal agencies or tribal institutions nominated by governors, tribal authorities, or the President.²² Thus, this model accommodates federal participation more readily than an interstate compact. The designers of the new entity would have to decide how best to balance federal and state interests, particularly with respect to voting powers and whether there would be federal backstop authority.

²¹This model probably comes closest to accommodating the intent of the Task Force on Electric System Reliability to the Secretary of Energy Advisory Board in its Recommendation #25. (See DOE 1998).

²²A critical design element would be the process for removal of commissioners from the regional board. Serving at the pleasure of the appointing authority is quite different from serving for a distinct term, for example. Another significant matter to address is how such an organization would be staffed.

As with the other models, designers would have to define the class of transmission facilities subject to the new entity's jurisdiction and establish a funding mechanism. If the new entity were to have final siting authority on behalf of federal agencies, the enabling legislation would have to amend the enabling laws for those agencies. Similarly, state legislatures would have to make appropriate changes to their respective siting laws. A sunset provision could be included to ensure future review of the need for and effectiveness of the new entity.

Joint federal-state boards

Although there are precedents in the telecommunications sector for the establishment of joint regulatory boards, this model has not been used in electricity regulation despite periodic expressions of interest by the National Association of Regulatory Commissioners (NARUC) and various states. Further, the relevance of this structure to transmission siting, at least under existing law, is at best uncertain.

Section 209(a) of the Federal Power Act authorizes FERC to refer an electricity matter under its jurisdiction to a joint state board composed of nominees selected by the respective state utility commissions or by the state's governor if there is no state commission. A joint board is to have the same power, duties, and liabilities as a commissioner at FERC who has been directed by FERC to hold hearings. Thus, a joint board for an electricity matter, assuming unanimity among its members, would be equivalent to a sixth commissioner at FERC with respect to FERC decisions on the matter.²³

However, under current law, FERC has no jurisdiction over transmission siting, so it would have no basis upon which to call for the establishment of a joint board to address transmission siting issues.

Regional FERC offices

FERC could be directed through federal legislation to establish offices in each RTO's area; each office could be made responsible for transmission siting and rate regulation within the region. Such legislation could limit FERC's regional activities to matters such as hearings before administrative law judges and staff reviews of siting applications and could reserve final decision authority to the commission. The legislation could also direct FERC regarding the creation of regional joint state boards on transmission siting, the weight to be given to decisions by such boards, and how FERC's siting decisions should take into account the views and expertise of other federal agencies and Native American tribes.

²³The full text of Section 209(a) reads:

[FERC] may refer any matter arising in the administration of this Part to a board to be composed of a member or members, as determined by the Commission, from the State or each of the States affected or to be affected by such matter. Any such board shall be vested with the same power and be subject to the same duties and liabilities as in the case of a member of the Commission when designated by the Commission to hold any hearings. The action of such board shall have such force and effect and its proceedings shall be conducted in such manner as the Commission shall by regulations prescribe. The board shall be appointed by the Commission from persons nominated by the State commission of each state affected, or by the Governor of such State if there is no State commission. Each State affected shall be entitled to the same number of representatives on the board unless the nominating power of such state waives such right. The Commission shall have discretion to reject the nominee from any State, but shall thereupon invite a new nomination from that state. The members of a board shall receive such allowances for expenses as the Commission shall provide. The Commission may, when in its discretion sufficient reason exists therefore, revoke any reference to such a board.

Defining “Regional Transmission Facilities”

If regional transmission siting entities were established, the category of facilities subject to the jurisdiction of these bodies would probably need to be defined. The subsections below address possible criteria for this definition and the institutional context in which they might be applied.

Objective Criteria

One way to define the transmission facilities that would fall under the jurisdiction of a regional siting body is to use objective indices, such line voltage or length or whether the line would cross state boundaries. Although these criteria may sound reasonable, they may not always yield the expected results. For example, in some sparsely populated areas, lines that serve transmission functions may be comparatively low voltage; conversely, in some densely populated areas, distribution lines may be designed for economic reasons to operate at high voltages. Another example is that a facility may be used in part for transmission and in part for distribution purposes. One way to deal with problems of this kind is to create a definition based on objective criteria with a mechanism that would allow an affected party to petition for a waiver, based on demonstrating that the criteria should not be applied in a specific case.²⁴

Functional Tests

An alternative for defining the jurisdiction of a regional body is to apply functional tests that gauge whether a facility would be used primarily or wholly for transmission and define the degree of its expected contribution to the reliability of the regional grid. A significant objection to this approach is its lack of transparency—applying it could require hearing and evaluating evidence before a decision could be made about whether a proposed facility is regionally significant.

Economic Test

An economic test could be devised to estimate the probable economic benefits that a line would provide for consumers over a given period through either improved access to lower-cost generation or mitigation of potential market power. This estimate could be compared to an agreed-upon threshold for determining regionally significant projects. This approach might also require gathering and evaluating evidence.

In short, there are no easy, straightforward criteria. However, determining the criteria would be more important in some institutional contexts than others. For example, if the institution’s principal function is to facilitate cooperation among the reviewing agencies in the region, if the agencies retain their existing authority, and if no federal backstop mechanism is established, then no jurisdictional changes would result from the designation of a project as a “regional project.” A “regional project” would be channeled through the regional cooperative process, but no other changes would ensue. As a result, the criteria for determining a regional

²⁴ Many states currently use objective criteria (such as voltage and line length) to determine whether transmission distribution projects need state approval. Projects that do not meet the defined threshold in these states still have to meet local zoning, safety, and other requirements, but they do not have to go through the full state siting review process.

project would be less important (and less likely to be the focus of litigation) than if designation as “regional” would mean that a project might under certain conditions be shifted onto a federal jurisdictional track. As long as jurisdiction would not be affected, the most important choice the reviewing agencies would have to make could be whether they wanted to channel all transmission projects through the regional body, or only a subset of projects deemed to have regional significance.

By contrast, if the regional institution was given the power to decide siting questions, the scope of its jurisdiction would be much more important, and the founding parties would probably wish to define criteria for jurisdiction very carefully. Similarly, if a federal backstop mechanism were created by federal legislation, the legislation would probably have to address jurisdiction. One approach would be to sidestep the criteria altogether and specify that under certain conditions (e.g., failure of a reviewing agency to act within a specified period, or rejection by a reviewing agency of an RTO-approved transmission project), the applicant could petition the backstop agency to take the case. Another alternative would be for the legislation to direct the backstop agency to conduct a rulemaking procedure to establish appropriate criteria for identifying transmission projects of regional or national importance.

Improving the Existing State-Based Siting Process

Regardless of how the debate evolves over whether regional or federal authorities should be responsible for certain aspects of transmission siting, states will continue to be responsible for siting a large proportion of the nation’s new transmission facilities. Thus, it is worthwhile to consider how the state-based siting process could be improved.

Transmission proposals fall typically into one or more of three categories:

- Those needed to connect a new generator to the grid,
- Those needed to meet reliability standards, and
- Those needed to enable increased electricity trade.

Some projects are very small in geographic scope; others extend for hundreds or even thousands of miles.²⁵

Although there is debate about the scope of possible federal or regional responsibilities for transmission siting, state authorities will continue to review dozens of transmission or transmission-related proposals each year, and responsibility for siting generation is likely to remain with the states. Similarly, most legislative proposals that would shift some jurisdiction for transmission siting away from states (e.g., transfer a “backstop” authority to FERC) nonetheless leave states with the primary authority for this function. State-based transmission siting processes vary considerably across the U.S., and, for the most part, worthy projects are approved, and deficient projects are discouraged, improved, or rejected. Most transmission projects are intrastate and small in scale.

²⁵A recent proposal (not yet filed at a siting authority) would build approximately 2,000 miles of transmission lines to connect new coal generation in Wyoming with load centers in Chicago and Los Angeles.

Even successful siting cases may have shortcomings, and some cases illustrate recurrent criticisms of state-based transmission siting that warrant attention. Some observers believe that the cases that could have been handled better represent exceptions to a basically sound system. Others see these cases as symptomatic of a need for fundamental changes.

Accountability

Any system of regulation must have and retain public confidence. Generally, regulators earn public confidence by being fair, competent, and consistent over time. In the United States, the general practice is to assign responsibility for regulation to the level of government that can most effectively serve and protect the interests of the citizens affected. This practice allows local conditions and differences to be reflected in regulatory decisions, and non-local considerations can be taken into account when appropriate.

Improvements to Siting Processes

State laws governing transmission siting are the product of serious debate among elected officials. Likewise, state siting decisions are the products of a careful weighing of evidence in light of public policy expressed in statutes. Although state siting laws and processes have been conscientiously developed, improvements may be needed to maintain a reliable and adequate electricity grid. Some possible changes are discussed below.

"One-stop" siting process

Some states place the authority for considering transmission siting proposals in a single agency, which may be the state regulatory utility commission or a siting board made up of decision makers from several government departments. This structure makes accountability for siting decisions clear, and it enables applicants to become familiar with a single process. If local authorities have a role in the approval process, it is important that the state be able to impose on all local reviewers a common, statewide perspective regarding the regulated utility system.²⁶

Interstate projects would be eligible for one-stop treatment only if the affected states combined their efforts into a regional siting process. This principle has many supporters, but the procedural requirements would be very demanding; the authors are aware of no successful attempt at a voluntary, one-stop, multi-state siting process.²⁷ The dilemma for states is often thought to be whether the state siting authority should focus exclusively on protecting the state's interests or should take an expansive view and consider regional interests. This is a false choice. The long-term interests of most consumers are best served by addressing regional grid needs while accounting for state interests at the same time.²⁸

²⁶For example, recent legislation passed in Colorado modified the standing of local authorities in transmission siting matters. The PUC can now pre-empt the decision of local authorities if there is a compelling state interest.

²⁷Ohio has a statute that explicitly authorizes its transmission siting authority to cooperate with other states, but this process has yet to be tested. The western states have begun negotiations concerning a common interstate siting protocol for the west, which could result in something like a regional one-stop process.

²⁸There are many examples of state siting orders that make a special effort to acknowledge the importance of regional concerns. There are also examples that do the opposite.

Three Views of State-Based Siting

Three organizations with distinctly different perspectives about U.S. electricity policy are the Western Governors' Association, the Edison Electric Institute, and the Electricity Consumers Alliance. Although many parties have views about how to change the transmission siting process, the views of these organizations illustrate that there is a broad range of opinions.

The Western Governors' Association (WGA) is a policy forum serving 18 western states, including Alaska and Hawaii. The organization has a long-standing interest in transmission siting and energy policy. The WGA position is:

- Transmission expansion should support three key priorities: enhance reliability, reduce consumers' costs, and promote fuel source diversity.
- Need should be established using regional criteria.
- Siting should remain the responsibility of the states.
- The states should collaborate in the review of interstate transmission projects, and federal land management agencies should join this collaboration.

The Edison Electric Institute (EEI) is a trade association that represents the interests of investor-owned electric utilities. The EEI position is:

- States should have a limited amount of time to review any transmission project.
- If a state rejects a project or does not rule within the allotted time, FERC should be authorized to take the case as it stands and rule upon it within a specific time period.
- Other EEI recommendations concerning federal land management agencies focus on enhancing coordination and attention to deadlines in agency reviews of siting proposals.

The Electric Consumers Alliance (ECA) addresses electricity policy issues nationally and in key states on behalf of small consumers and their local organizations. The ECA position is:

- Determination of need for new transmission should be made by a regional transmission organization.
- Federal, state, and local reviews should take no more than 12 to 18 months.
- Reviews by more than one agency within a single state should be combined. Similarly, reviews by more than one federal agency should be combined.
- If federal or state reviews are not complete after the allotted time, FERC should take and rule on the case.
- The rights of individuals must be respected in the siting process.

Sources: The Western Governors' Association published its views in *Conceptual Plans for Electricity Transmission in the West*, 2001). The Edison Electric Institute (EEI) is a trade association for investor-owned electric utilities. EEI's views were conveyed to the authors in a personal conversation with Rich Loughery and Henry Bartholomew. The Electric Consumers Alliance (ECA) represents hundreds of rural, senior, low-income, small-business, minority and other consumer organizations. ECA conveyed its views at a DOE public hearing on September 28, 2001.

States will also need to address the allocation of costs for a regionally justified transmission project. An RTO or a tightly operated ISO²⁹ will administer this matter once the project is built but typically does not have an active role at the project review stage. If there is a problem with the allocation of costs and benefits among states and their consumers, these money matters should be negotiated under pressure from regulators (as they often are in natural gas open-season proceedings).³⁰ Siting authorities can send signals to developers and allow reasonable time for proposals to be adjusted to address such concerns. Authorities can also encourage project planners to address this subject with stakeholders and the public before an application is filed.

Ex parte rules control how information flows to and from the regulatory body; they are intended ensure a fair process free of abuses by parties who have ready access to decision makers. The evidentiary basis for an order should be clear from the record. However, ex parte rules can hinder the management of siting dockets and negotiations with the applicant or other reviewing agencies by shielding the siting authority from valuable insights more likely to emerge in conversation than in cross-examination. Beyond speaking through their orders, regulators can find ways to communicate constructive information in a fair way, using methods such as workshops, special masters and other alternative dispute resolution methods, written questions to the parties, status orders, etc.

Maximum time limits

Most transmission siting proposals are small in scale and are reviewed and acted on by the relevant state authority within a year. Larger projects attract more attention from intervenors, are more complex, and may take longer. In some protracted cases, the siting authority may, because of reluctance to reject a project that appears to have merit but needs modification before it can be approved, allow the applicant time to correct deficiencies that emerge during the proceeding.

In general, however, siting authorities should strive to maintain schedules and avoid delays. Among other things, this means not allowing opponents of a project to hold up the process. Opponents must have a fair opportunity to gather information and present a case but should not be allowed to take control of the calendar. The project proponent can help prevent this kind of delay by presenting a credible array of alternatives so that opposing parties cannot obstruct proceedings by calling for inquiries into reasonable alternatives that have not been addressed in the proposal.³¹

As an alternative to allowing the siting review calendar to be based on judgment calls, some states impose a time limit on the process. However, if a time limit is to have a positive effect, the time allowed must be sufficient for a review that will meet public expectations for thoroughness and fairness. A very tight time limit can too frequently put the authority in the difficult position of nearing the deadline with inadequate evidence to find in favor of a project. A system that frequently results in rejections on procedural grounds or approvals by default is not a good system.

²⁹A tightly operated pool is one that controls and dispatches all the generators to reduce overall costs, and internalizes numerous cost allocation decisions in its rate structure.

³⁰The April 2001 Connecticut Siting Council decision to reject the Cross Sound Cable project included a warning, presumably directed at successor proposals regarding the allocation of costs as compared to the expected benefits.

³¹Of course, if there is a superior alternative, the process must accommodate it. Proponents of transmission projects should do their best to ensure that there are no superior alternatives and expect the review process to ratify that view.

A recurrent complaint from prospective applicants is that siting processes without time limits are too unpredictable. For example, unpredictable time frames can negatively affect project financing; an applicant may be reluctant to spend the money to develop a proposal and support it through the approval process unless it is reasonably certain that it will be able to obtain financing for the construction phase of the project. However, potential financial backers may be unwilling or unable to address the financial details of a project if they do not know when construction might begin or be completed, and a project tied up in a protracted review is more likely to be adversely affected by ongoing changes in bulk power markets. Reasonable time limits on transmission siting processes would help dispel the uncertainty that appears to hamper many business decisions in the transmission sector.³²

Clarify approval criteria

Fortunately, many transmission proposals that come before siting authorities address unambiguous needs to improve reliability or to respond to growth. The difficult cases are ones in which the facts do not line up well with the approval criteria, or the criteria themselves are inadequate for the specific situation. States should examine the approval criteria in their siting statutes in light of the significant changes occurring in bulk power markets (see “The Regional Perspective”, on page E-13). In addition, when a case exposes a weakness in the statute, this should be addressed by the state legislature as soon as possible.³³

Cost recovery rules and grid investment needs

Utility costs cannot be recovered from consumers without rate proceedings. Many utilities’ rates are frozen or capped for long periods as part of a regulatory agreement, as imposed by a legislature in electric restructuring laws, or for punitive reasons. Without performance incentives or the opportunity to recover extraordinary costs, a utility may decide to avoid major investments even when they are needed. When considering rate freezes and caps, regulators and legislators should consider the horizon of prospective utility investments and consider whether a cap will stifle important projects.³⁴

Federal incentives for state changes

In some instances, state siting processes based on an accumulation of law and precedent may no longer be adequate to address the challenges associated with the current restructuring of the U.S. electricity industry.³⁵

³²A complete proposal, based on standards established by statute and rule, is key to making a time limit work. Until a proposal is complete, the “clock” should not start.

³³Legislators are sometimes reluctant to “open up” a statute for fear that others will take the opportunity to press for other changes. This concern must be balanced against the need to update an important process.

³⁴Utilizing traditional regulatory tools like Construction Work in Progress accounts or simply booking and deferring costs for future regulatory treatment can provide utilities with assurance that they will recover the costs of needed transmission investment incurred during a rate cap, including a reasonable return on investment after the end of the rate cap. However, if the cap is part of a performance ratemaking plan, and the utility has accepted the risk that such costs may be needed during the period of the plan, then asset depreciation would start normally, and the utility could include the depreciated costs in the consideration of post-plan rates. In this latter case, utilities would still have incentives to pursue cost-effective transmission investments because efficiency improvements inure, at least in part, to the utility’s profits in performance based ratemaking.

³⁵This subject requires extensive analysis and lends itself to the “best practices” project discussed below in “Federal Assistance.”

Given the arcane nature of transmission siting and the potentially difficult political challenge of updating the siting process, the federal government may be able to facilitate needed change by means of incentives.

Federal sponsorship of workshops and development of model legislation are worthwhile approaches; another initiative that has significant support would put the Federal Energy Regulatory Commission in a backstop role to state siting authorities. This approach, which would require changes in federal law, would give FERC siting jurisdiction over proposed “regional transmission facilities” (See section on “Defining ‘Regional Transmission Facilities,’” above) if affected states fail to act within a specified period.³⁶ Many observers expect that if FERC had this role, most states would intensify and coordinate their efforts and complete reviews in time to avoid an unwanted change of venue to the backstop authority.

An approach that some observers find less aggressive would be for federal law to support or assist the formation of cooperative regional bodies composed of officials from affected states; these regional bodies could be convened to coordinate the review of regionally significant transmission proposals. (This idea is explored in the section “The Regional Perspective,” above.) These regional institutions could be aided by findings of need from the soon-to-be-formed RTOs. The question of what authority states should retain in future siting processes is currently stalemated between advocates of state authority and proponents of federal authority.

Improving Agency and Industry Practices

Not all barriers to siting of new transmission lines are related to the state-based review process. Some delays and rejections result from omissions or other types of problems with transmission proposals or with the practices of transmission owners. The subsections below address changes in practice by prospective transmission siting applicants that could improve the quality of regulatory outcomes.

This section also turns attention to the federal government, addressing siting on federal lands, siting by federal utilities, and other actions the federal government can take to improve siting results.

The subjects in this section are linked by improving methods, utilizing existing methods better, more effectively deploying new methods, and communicating among all affected parties more effectively. A positive outcome would be one in which the transmission owners’ interest and the public interest are better aligned than they appear to be today.

Effective Presentation of Alternatives

Transmission siting proposals are complex, especially for large-scale projects designed to improve reliability or enable increased energy transfers over wide regions. To aid decision makers in making a sound choice

³⁶FERC backstop authority could also be exercised if state siting authorities addressing a regionally important multi-state project disagree on whether the project should be permitted. This is different from a trigger based on a time deadline because in this case the states would have executed their responsibilities. FERC could determine whether some compromise or blending of interests among the affected states would be possible.

about whether to permit a project (and to prevent critics from derailing a project by shifting attention to other options), a proposal should include a detailed presentation of the alternatives considered.³⁷

Alternatives enhance credibility and public confidence

A proposal that presents and compares alternatives shows that the proponent is focused on meeting a system need in the best way, not on getting a particular project built. Addressing alternatives shows the applicant's confidence that the proposal represents the best approach to meeting a system need. This approach can be aided by undertaking an open planning process once a need has been recognized but before a solution is selected; the public should be engaged in this process to assist the transmission company in combining its own and public interest priorities in the decision process.³⁸ This process improvement should not be used, however, as a way to shift the responsibility to develop alternatives to intervenors. Many permitting agencies already require that proposals include alternatives. Agencies that do not should consider adding this requirement as an investment to speed the overall process.

Range of alternatives must be broad

Even when an applicant presents alternatives, the range addressed may be too narrow. Efforts to define a generic list of alternatives that should be addressed are difficult because of the inherent variety of grid needs and circumstances. Instead of mechanically addressing a list of required alternatives, an applicant will likely fare better by determining what alternative routes or alternatives to transmission are likely to be considered relevant by the regulators and potential intervenors and addressing these options in detail. (The applicant will readily learn about these alternatives during a transparent planning process.)

If important alternatives are not evaluated in the proposal, they are likely to be introduced by public advocates or other intervenors who may assert that the alternatives represent a better approach than the proposed project.³⁹ It is also worth adding that a transmission line serves no other purpose than to conduct power, but other options such as increasing energy efficiency, managing load, and constructing local generation, may have distinct, positive externalities in the community while also contributing to reliability. Franchised wires companies are usually concerned with the general economic well-being of their service areas, so they have reason to consider a broad range of potentially beneficial local investments.

Advantages of Open Planning

A frustration that is sometimes expressed in the midst of a transmission siting dispute goes something like this: "If only the applicant had spoken with us before going public with the proposal. Now both sides are digging in for a fight." Costly proposals to build new lines sometimes seem to come out of the blue because

³⁷This is not usually a concern for transmission that will interconnect a generator with the grid.

³⁸Southwestern Public Service, then a subsidiary of New Century Energies, conducted such an open process in building a transmission line in Kansas. As a result the Kansas Corporation Commission approved the segment of the project in its state despite the lack of direct and immediate benefit to Kansas. (Personal communications with Mark Doljac, Kansas Corporation Commission.)

³⁹An example is a transmission project in New Mexico that was rejected after local generation and efficiency alternatives were proposed by the state Attorney General and other intervenors.

needs are not articulated ahead of time, if ever; once a transmission corridor is proposed, land owners and other interested parties may feel as if set upon by a powerful force.

It does not have to be this way. Although some parties will oppose power line proposals regardless of the circumstances, others may be moved to oppose a project not so much because of its content but because of perceptions that the proponent is behaving in an arrogant or paternalistic fashion or making a unilateral decision. Despite the costs of regular reports to the public about the state of the transmission grid and its expected needs, it is in the interest of both the public and the applicant or RTO to make these reports. System needs can be tracked as they evolve from technical indications into demonstrable problems. Discussions about how to address growing concerns can be particularly productive if they involve affected parties and all relevant information is available to anyone who cares to look for it. Early identification of potential problem areas also allows small-scale responses like distributed resources the best opportunity to contribute efficiently to a solution.⁴⁰

Deterministic and Probabilistic Planning

Deterministic analysis identifies possible events (e.g., failure of a large generator) and studies their effects on reliability. The analyst assesses the likelihood of these events based on professional judgment. Probabilistic analysis uses a rigorous statistical method to assess the likelihood of an event and its effects. Probabilistic analysis allows for relatively easy numerical comparisons of alternatives, but these comparisons may seem more precise than they actually are because the results are highly dependent on the quality of forecasts of future equipment performance. Deterministic approaches are more traditional and less costly. Both methods are valuable. Regulators should encourage the use of both so decision makers can have the most complete information possible.

Impact of Rate Design on Decision Making

As its participants know well, there are many ways to regulate the electric utility industry. The rules and rate designs in force at any given time affect the decisions and behavior of the players. Some examples follow showing the effects of rate design on the assessment of new transmission proposals:

- If the cost of a new transmission project is “rolled in” to average regional transmission rates, the new transmission will be far easier to justify than if the same costs are assigned only to the group of consumers in the region whose changes in electricity usage have caused the investment to be necessary.⁴¹

⁴⁰A related topic is that the grid in which investments are made today will not be the same grid in just a few years. Loads will change, new generation will be built, and some units may be retired. One merit of a transparent process is that it helps focus on the investments that are most likely to make sense for a wide variety of futures.

⁴¹A corollary to this idea is drawn from experience with highways. If new roadways are built to address congestion without addressing lower-cost ways to reduce traffic, and if the source of the demand for the new roadways does not pay the cost for the new construction, the new road can generate more traffic. That is, more traffic than expected will use the new roadway because it is available, and congestion will increase more rapidly than highway planners would have predicted based on prior patterns. Similarly if a new remedial connection to the grid is built and the costs are assigned to society rather than to the connection’s direct beneficiaries, the connection can result in increased demand (either from inefficient generation siting or even greater volumes of long distance energy trading) and therefore increased congestion. Some would call this an implicit subsidy. The result of this scenario is increased congestion, much more rapidly than would be expected based on prior patterns.

- If the costs of an alternative are treated as rolled in while the costs of competing alternatives are charged incrementally to those whose energy use has caused the need for the new transmission, the utility will tend to select the alternative whose costs are rolled in even if it is more expensive and less effective at meeting grid needs.

These are not hypothetical examples. The first case is typical in the New England Power Pool (NEPOOL), where the cost of “pool transmission facilities” is borne by all consumers in New England. Although these facilities are not intended as local interconnection service and are in principle necessary for reliability, their need is often the result of demand growth in a distinct part of the whole region. Nonetheless, everyone pays. The second case is typical in most regions. Distributed resources such as energy efficiency and local generation are the best answers to some grid problems. Yet the system-wide financial support available for transmission to assist the grid is not available for these competing alternatives. Basic economics suggests that when the cause of an investment can be clearly assigned to a specific group of customers, those customers should pay for it. Implementation of this rule by regulators is complex in practice though congestion transmission pricing is a very positive step in this direction. Ignoring this rule will adversely affect the nature and efficiency of future utility investments.⁴²

Encouraging Innovation

One way that the transmission siting process can be improved is for regulators to reward applicants for bringing forward innovative ways to address transmission grid needs. There is evidence of this already, as DC proposals, undersea projects, and flexible AC transmission system (FACTS) devices begin to appear on grid expansion plans. Industry and DOE should continue their attention to the pace and direction of transmission-related research and development, and the industry should continue to educate regulators about the merits of new approaches and devices that can enhance the grid.

Effects of Cost Minimization

Some parties are critical of existing regulation because returns on equity investment are thought to be inadequate compared with the risks of the enterprise and the value added by transmission facilities. In this view, transmission costs are roughly 10 percent of retail electric rates; a modest increase over this figure should be acceptable to consumers if the result is greater incentive to propose needed projects. Allowing higher proposal costs would also tend to widen the range of economically competitive alternatives.

At the same time, applicants sometimes resist adding features to their projects that would increase costs but bring the proposals in line with public policy concerns. Examples of such features include:

- Selective undergrounding,
- More attractive tower designs and wire placements,

⁴²This idea can be extended to the retail regime as well. The State of Connecticut directs system benefit funds to support demand-response programs in designated transmission- and distribution-constrained areas. (Also, see Moskovitz, 2001.)

- Longer routes around sensitive areas,⁴³
- Zigzag corridors as an alternative to long, straight wooded corridors, and
- Sharing of more financial benefits with affected landowners.⁴⁴

Some might suggest that these elements “gold plate” a project. Others see these features as real costs necessary to win support and fit a needed project into surroundings that are not blank slates but lands protected by legitimate property rights and valued by society. A transparent planning process that focuses more broadly on addressing future needs will aid applicants in identifying beneficial improvements to budding projects.

Need for Complete Applications

Transmission siting is a difficult process at best. When a proposal is incomplete, the process becomes still more difficult. The reasons for incomplete applications range from a lack of familiarity with the rules and expectations of the siting authority to intentional omission of significant information. In any case, the burden is on the applicant to know and abide by the spirit of the rules. This is not just an issue of fair play; trust is a fragile commodity in a process where the threat of eminent domain always looms, even though it is rarely mentioned and even more rarely used. When applicants do not abide by the rules of the process, they may lose the trust of the public and the siting agency. Once trust has been compromised, it is difficult for a review process to reach an outcome that will be in the public interest and be so recognized by most parties.

Transmission Company Perceptions of the Siting Process

In some jurisdictions, there is anecdotal evidence that at least some transmission system problems are not being addressed because utility executives are concerned about the hostile reception they expect that proposals would receive from the state siting process.⁴⁵ Utilities holding this view assume they would lose in the court of public opinion and waste financial and human resources in the attempt. It is difficult to evaluate these anecdotes for several reasons. A utility speaking freely and acknowledging reluctance would risk a regulatory ruling that it had been imprudent for failing to pursue construction of needed facilities. Further, the root cause of the reluctance may relate to factors other than the siting process. The existence of these stories, however, is clear indication of a problem. One objective of reform of the siting process should be to ensure that the process is perceived as welcoming good proposals and offering a fair test to all projects. A process in which utilities with an obligation to deliver are so intimidated that worthwhile projects remain under wraps does not serve the public interest.

⁴³See description of Cross Sound Connector project in the section “Two Instructive Transmission Siting Cases,” on page E-8.

⁴⁴Utilities express concern that premature identification of a route may result in increased easement costs. In contrast, rumors of a prospective transmission project may adversely affect land values and burden landowners with uncertainty. We suggest putting all the facts on the table and relying on the siting authority (and courts if necessary) to rule expeditiously on the project and its route and to set fair and reasonable easement costs.

⁴⁵Other possible factors include uncertainties regarding cost recovery in a state or how costs would be allocated among states and companies for interstate projects. Local politics may also be a factor.

Solving Existing Aesthetic Problems in Combination with New Transmission Projects

In some cases, a new transmission project can provide the means to resolving a community's existing aesthetic problem. Consider the case of an aging industrial waterfront area that has the potential to be transformed into a civic and tourist center, but its best views are marred by an accumulation of high voltage lines left over from its industrial past. Some communities are working with their utilities on such projects by finding ways to remove some or all of these lines in conjunction with upgrading other transmission lines nearby. This somewhat radical approach—removing still-functional facilities from service for aesthetic reasons—can produce a more efficient transmission system, while strengthening public support for an otherwise intrusive project.

One example is in Minnesota. As part of the controversial Chisago-Apple River proposal, a mediation process revealed the existence of an opportunity to clean up the visual effect of accumulated power lines in the city of Taylor Falls, MN. Power lines would be removed, and one 161 kV line would cross the river in its place. The concept would also place the new line underground for some distance near the waterfront. Execution of this idea is still pending; Xcel and Dairyland Cooperative have not yet filed the new proposal with siting authorities in Minnesota and Wisconsin.

Another example is in Vermont, where the Vermont Electric Power Company and the City of Burlington are working together in advance of a major VELCO transmission siting proposal to see if lines on the redeveloped waterfront of Vermont's largest city can be removed as part of the project. Advance planning ensures that regardless of the decision, all sides will know that great effort was made by VELCO to find positive collateral benefits.

Federal Actions to Improve the Siting Process

There are several ways, described in the subsections below, that the federal government could promote improved transmission siting performance in the United States, independent of how jurisdiction is apportioned between state and federal regulators.

Improving federal land management agency reviews

Probably the second-most-often-heard category of complaints about the transmission siting process (after concerns about the state process) relates to federal land management agency reviews of proposals. Almost 29 percent of the total land area of the United States is owned by the federal government and managed by the Departments of Defense, Agriculture, Interior, and other agencies (*Statistical Abstract of the United States, 2000*; see box below for additional details). In addition, other non-federal land areas such as airsheds, wetlands, navigable waterways, and coastal zones are subject to federal oversight by the Environmental Protection Agency, the Corps of Engineers and other agencies.

These complaints fall into four general categories:

- There is often inconsistency within an agency in the ways local or regional land managers review transmission projects.

Distribution of Federal Lands in the United States

Although almost 29 percent of the land area of the United States is federally owned, the distribution of this land is very uneven. Nearly 38 percent of all federal land is in Alaska where almost 68 percent of the state is federally owned. Another 54 percent of all federal land is concentrated in the 11 states of the contiguous U.S. that are located wholly or partially west of the Continental Divide. Additional details about these 11 states are presented in the following table:

State	Total Area (Acres, in 000's)	% Federal Land
Arizona	72,688	45.6
California	100,207	44.9
Colorado	66,486	36.4
Idaho	52,933	62.5
Montana	93,271	28.0
New Mexico	77,766	34.2
Nevada	70,264	83.1
Oregon	61,599	52.6
Utah	52,697	64.5
Washington	42,694	28.5
Wyoming	62,343	49.9

Source: *Statistical Abstract of the United States, 2000* (U.S. Dept. of Commerce, December, 2000), Table No. 381 (1997 data).

- When two (or more) federal agencies are involved, there is frequently inadequate communication and coordination between them.
- Review of transmission proposals does not appear to be important in comparison to the primary mission of the agency.
- Federal agencies frequently wait to conduct their reviews until state reviews are completed and a final route has been selected. This introduces the risk that a federal agency may require a route change, leading to another (time- and cost-consuming) iteration in the state process.

(See box on Alturas case (next page), which illustrates some of these problems.) It should be noted that research for this paper also found reports of good cooperation between states and federal agencies.

The Alturas 345 kV Intertie Project

This project demonstrates some reasons why potential developers of transmission facilities regard gaining permits from affected federal agencies as one of the most difficult and frustrating aspects of transmission siting.

The Alturas line is 163 miles long and runs between Reno, Nevada, and Alturas, California. About 20 miles of the line is in Nevada and the balance is in northern California. The line was needed primarily to support reliability in the fast-growing area around Reno, and to enable the applicant, Sierra Pacific, to gain access to low-cost hydro from the Pacific Northwest for the benefit of retail customers in both Nevada and California.

The project was proposed to the Nevada Public Service Commission early in 1993 and the Commission approved it in November 1993. Sierra Pacific then turned to the other affected agencies: the California Public Utilities Commission (CPUC), and several federal agencies [the Bureau of Land Management (BLM), the U.S. Forest Service, the Bonneville Power Administration (BPA), and the U.S. Fish and Wildlife Service (FWS)]. BLM became as the lead federal agency for the purposes of preparing an environmental impact statement because it had the most affected acreage. The Forest Service had two affected areas, three line miles in the Modoc National Forest in California, and eight line miles in the Humboldt-Toiyabe National Forest in Nevada. The California Public Utilities Commission became the lead agency for state environmental purposes.

In the spring of 1994 BLM and CPUC jointly hired a consulting firm to prepare an environmental impact report (EIR) for the state and an environmental impact statement (EIS) for the federal agencies. The applicant paid the cost of this work. The draft statements were issued for comment in March 1995. In the fall of 1995, the applicant believed that the comments received could be satisfactorily addressed through several kinds of mitigating measures. BLM issued the final EIS in November 1995, and approved its portion of the project in February 1996. The CPUC approved its portion of the line in January of 1996. However, in February 1996 the manager of the Humboldt-Toiyabe National Forest issued a “no action” decision, and argued that the EIS had been flawed because it had not addressed a sufficiently wide range of alternatives, including the alternative of skirting the Humboldt-Toiyabe National Forest entirely.

The applicant appealed this decision, first to the regional forest manager and then to the deputy chief of the Forest Service. The appeal process took several months, and the results of the appeal were inconclusive. In June 1996 the deputy chief ordered the “no action” decision withdrawn, but he also directed the Humboldt-Toiyabe manager to obtain whatever information was needed to make a new decision. This led to several months of dialogue between the applicant and the Humboldt-Toiyabe manager, and the filing by the applicant of several hundred pages of additional information. The manager of the Modoc National Forest, who had not issued a final decision on the portion of the route that would cross the Modoc area, joined this dialogue.

However, the applicant found that the continuing uncertainty over the acceptability of the Humboldt-Toiyabe route segment was making it difficult to gain required permits from local governments in Nevada that would be needed for the construction phase of the project. These problems led the appli-

cant to examine the option of an alternative route on private land around the Humboldt-Toiyabe National Forest, even though this had several disadvantages. It would put the line into more developed areas, and make it more visible to local residents. This alternative route was about the same length as the initial route, but it was more costly because it would need more expensive towers in several locations, the right of way was more expensive, and additional legal costs would be involved. At length Sierra Pacific decided to pursue the private-land route and withdrew its application to cross the Humboldt-Toiyabe area in February 1997. Due to these route changes, the applicant had to go through some local-level processes a second time in Nevada.

In April 1997, the manager of the Modoc National Forest issued a decision on the EIS, also denying the applicant's request for a permit. Sierra Pacific appealed this decision to the chief of the Forest Service in May 1997, and this led eventually to the issuance of a permit in October 1997. However, several other parties to the proceeding appealed this latter action. After review, the decision to issue the permit was upheld in January 1998.

Construction of the project was begun in February 1998 and completed in December 1998. The applicant estimates that the difficulties with the Forest Service delayed the project by at least two years and led to additional costs of well over \$20 million.

Addressing these concerns about federal agency reviews must start with a recognition that a change in priorities is required: applicants deserve a timely, consistent, and substantive response from the federal government. For the same reason that a "one-stop" siting process makes sense at the state and local level, federal agencies should find a way to participate cooperatively and constructively in the overall siting process. This may require additional effort and resources from both the applicant and the agencies to consider alternative routes and solutions earlier in the process.

One option is to centralize individual agency responses to transmission proposals.⁴⁶ Special staff groups could be created in the headquarters of appropriate federal agencies to work jointly on reviewing transmission proposals, particularly if efforts to improve coordination among federal agencies and to train and inform regional managers about the importance of the transmission grid do not achieve the desired results.

Another option is to designate a lead agency for cases where two or more federal agencies are affected, and give that agency jurisdiction over all federal matters affected by the transmission proposal. It would be difficult to gain broad support for this approach because it would require some federal agencies at times give jurisdiction to another federal agency regarding land use within their domains. It is worth noting that this approach is not used in siting natural gas pipelines, even though siting such lines is wholly under federal jurisdiction.

A less radical version of this option would be to make the FERC the lead agency for coordinating all federal reviews of proposed transmission facilities, while specifying that other affected federal agencies would participate in the reviews as cooperating agencies, and would retain their existing authorities. Charging one agency with overall coordination of the process, especially one already experienced with environmental and other

⁴⁶See comments to the DOE by the Electricity Consumers Alliance, discussed in the section "Improving the Existing State-Based Siting Process" on page E-45.

types of analysis of electricity projects, would help to bring greater consistency and predictability to the federal review process. Further, given FERC's other responsibilities in the electricity area, it would have stronger reasons than most other agencies to press for good coordination, and eventually it would also have regional transmission plans at its disposal to use in confirming whether a proposed transmission line is needed. Presumably, establishing this approach would require federal legislation because of FERC's status as an independent regulatory agency.

Other measures that do not interfere with agencies' jurisdiction could be considered, such as memoranda of understanding and other commitments to complete project reviews in a timely way. A standard form or protocol could be developed to ensure that cooperative understandings are in place without compromising any agency's authority.

Innovative siting practices

Not surprisingly, most applicants prefer to use siting practices that have worked before. They believe this approach improves their chances of success, and that new approaches are risky. One reason for their caution is that mounting a transmission siting effort can be expensive, particularly if it is unsuccessful.⁴⁷ Despite this bias, innovative approaches that invest in early and more open planning and consider a more comprehensive range of alternatives may produce better outcomes. DOE should consider funding demonstration programs in this area.

Increasing transmission capacity of existing facilities

It is increasingly well understood that for some types of transmission system needs, adding generation resources in the load center can increase transfer capacity. In addition, new technologies such as static var compensators can give operators more control over grid flows and lead to a reduction in the amount of capacity that must be reserved for "N-1" contingencies.⁴⁸ DOE could focus resources on demonstrating technological options that are available but not in common practice, such as FACTS, high-voltage direct current (HVDC), and high-temperature superconductivity (HTS), which would increase the transfer capacity of existing facilities.⁴⁹

Identifying "best practices" for reviewing agencies

DOE could work with appropriate state-based organizations⁵⁰ to identify "best practices" for consideration by transmission siting authorities. The topics to be addressed could include:

⁴⁷See the section "Description of the Transmission Siting Process," on page E-3, for details on a transmission project that Florida Power abandoned after more than a decade of effort and expenditures of \$23 million.

⁴⁸An N-1 Contingency refers to the practice of assuring that the transmission system can withstand the change in power flows resulting from the sudden loss of any element on the system.

⁴⁹FACTS devices are sophisticated solid-state electronic switches that allow operators to control flow on certain power lines. HVDC lines do not operate synchronously with the AC grid but can move large amounts of power over great distances with almost no losses. HTS can also move large amounts of power with almost no losses; this technology is under development. See Issue Paper *Advanced Transmission Technologies* by J. Hauer, T. Overbye, J. Dagle, and S. Widergren.

⁵⁰Participation by organizations such as the National Governors' Association, the Western Governors' Association, and the National Association of Regulatory Utility Commissioners would be important to the success of such a project.

- Open planning;
- Treatment of alternatives;
- Criteria for project approval, including determination of need;
- Maximum time limits;
- Strategic use of undergrounding;
- Innovative easement agreements;
- Use of mitigating measures;
- Estimating probable cost/benefit implications for affected jurisdictions; and
- Development of model rules and decision criteria.

The Tennessee Valley Authority and the federal power marketing administrations with active transmission siting responsibilities could also participate in this project and adopt the resulting practices.

Guidelines for applicants

The federal government has a great capacity to provide leadership as can be seen in many energy-related areas. For example, the Federal Energy Management Program of DOE is working to make federal buildings energy efficient, not only as good management practices for those buildings, but also to set an example. Regarding transmission siting, DOE could work with state agencies⁵¹ and industry organizations⁵² to develop guidelines that would aid applicants in securing timely approval for proposed new transmission or grid-related projects. This project to develop guidelines would consider much the same subject matter as the preceding one focused on “best practices” but from the applicant's perspective. The Tennessee Valley Authority and the federal power marketing administrations with active transmission siting responsibilities could also contribute to the success of this project.

Innovative regulatory methods

Investor-owned utilities' high-voltage transmission systems are under FERC's rate-making jurisdiction.⁵³ Many utilities believe that rate-making incentives to build new transmission facilities are not adequate and have proposed increasing the return on investment allowed in transmission rates. There is also concern that transmission pricing should better reflect system economics and power flows. Addressing these proposals in detail is outside the scope of this paper,⁵⁴ but some comments about alternative approaches are relevant in the context of improving siting processes.

⁵¹See previous footnote.

⁵²Organizations such as the Edison Electric Institute, the American Public Power Association, the National Rural Electric Cooperative Association, and the Electric Power Supply Association could provide valuable assistance in the design and implementation of such a project.

⁵³This is true everywhere in the contiguous United States except Texas.

⁵⁴See the Issue Paper *Alternative Business Models for Transmission Investment and Operation* by S. Oren, G. Gross, and F. Alvarado addresses the return on equity issue. Generally, performance-based rate making for transmission service offers the prospect of improving utility incentives by bringing them into better alignment with the public interest.

Utilities' incentives are clearly driven by the regulations that define their revenue stream. Volumetric transmission rates promote increased volume on the grid, and utilities respond in a logical way by increasing throughput on their systems. In some cases, congestion or reliability problems ensue, leading to calls for additional capacity. An alternative approach would be to compensate utilities fairly (at whatever rate of return on equity regulators choose) for the use of their facilities regardless of throughput. Each utility would have its transmission rates set to recover its costs plus the return and would be subject to periodic rate adjustments to true up any divergence between expected revenue and actual results. Performance incentives for reliability and service could be incorporated into the system.

Under this regulatory alternative, a transmission-owning utility has no undue bias toward growth in assets. Investments that may promote more efficient use of existing facilities and avoid the need for new facilities may be more vigorously pursued, which may align corporate incentives more closely with the public interest. FERC could actively invite utilities to experiment with this form of regulation for a defined period of time. DOE could work with FERC to develop the plan.

Another area where FERC activities could be very helpful to transmission siting is in RTO development. An RTO can become an unbiased source of accurate, publicly tested regional planning information that can help siting authorities evaluate and validate the need for a variety of grid-related investments. An RTO can also provide insight about the appropriate allocation of the costs of interstate projects and about how transmission services should be priced in order to provide accurate economic signals for grid-related investments.

Summary and Conclusions

Siting electric transmission lines is currently a state responsibility.⁵⁵ Each state has the option to address transmission siting in its own laws, and most have done so. In most states, applicants must demonstrate that proposed facilities are needed, and a state siting authority must confirm that construction of the facilities would serve the public interest. If a facility would cross state lines, approval is needed from each state affected. Additional approvals are required from federal agencies if the line would cross federally owned or controlled lands, and consent from Native American tribes is needed to cross tribal lands. The public process for reviewing and approving the siting of proposed transmission facilities is unavoidably difficult and complex because it entails fitting long-lived and highly visible structures into physical surroundings where land is already in use for other purposes. This is especially true for transmission projects that are large in geographic scale because they tend to require approvals from many affected jurisdictions.

During the past decade, most small-scale, intrastate transmission proposals have been approved without major delay or controversy. Delay and controversy have been more common in larger, interstate projects; however, approval has been obtained eventually in most cases if the applicant has been persistent and presented alternative proposals. Some parties believe that this record is misleading, and suggest that some or even many applicants have refrained from proposing large-scale, multistate transmission projects. It is difficult to verify the extent of such withholding, but there has been a striking disparity during the past decade

⁵⁵With the exception of the federal power marketing administrations and the Tennessee Valley Authority, which have their own siting authorities.

between the level of new investment in generation and the level of new investment in transmission. This disparity suggests that some major transmission projects may indeed have been withheld and may not be just the result of excess capacity built in prior decades (though siting authorities should guard against the prospect of accelerated construction producing a new generation of stranded utility costs).

There are several possible reasons for withholding of proposals:

- Regional-scale transmission planning has lagged behind the development of regional-scale bulk power markets. It may be that the economic feasibility of some multistate projects is only now becoming apparent. The penalties to companies or investors who misjudge the economics of such projects can be severe.
- The transmission sector of the industry is in the midst of a fundamental reorganization. Many companies have not known whether they will remain in the transmission business or what the rules will be that will determine the rate of return on new transmission investments. It is reasonable to assume that some companies will not present new proposals until these uncertainties are resolved.
- The present state-based transmission siting process is difficult at best, particularly for large-scale projects.

Given these considerations, it is understandable that there is disagreement between those who think that the existing siting regime is basically sound but needs improvement, and those who believe that fundamental reforms are needed.

Problem Areas in the Existing Regime

Approval of a proposed transmission project is the culmination of a long and complex process that can go awry for many reasons. In addition, the transition to regional bulk power markets may raise significant new difficulties related to transmission siting. Some of the principal problem areas are:

Need for regional-scale transmission planning

Although some regional plans have been developed, many areas of the nation do not have regional plans, and some of the plans that have been prepared are very incomplete (see the Issue Paper *Transmission Planning and the Need for New Capacity* by E. Hirst and B. Kirby). There is an urgent need for regional transmission plans that after public review will confirm to prospective applicants and reviewing agencies that specific regional transmission needs have been identified and ranked according to priority. Regional transmission planning is one of several critical functions that regional transmission organizations (RTOs) would perform, as envisioned by FERC.

Possible need for interim transmission plans

Rather than wait for RTOs to be formed and regional transmission plans to be developed by them, as an interim measure it might be useful for DOE and FERC to identify key bottlenecks and for the FERC to task administrative law judges to work with appropriate parties in the bottleneck areas to develop interim trans-

mission plans. A possible benefit of such plans is that they would probably flag some important issues affecting groups of states, and thus help to spur the formation of cooperative regional institutions.

Need for transparent planning and systematic consideration of alternatives by applicants

To win approval, a transmission proposal should be developed through a process open to participation by all interested parties and with systematic attention to a broad range of alternatives.

Need for coordination, consistency, and timeliness of federal agency reviews

Applicants and other parties cite four kinds of problems with federal agency reviews of transmission siting proposals:

1. Local or regional officials within an agency are sometimes inconsistent in their reviews of transmission projects.
2. If two or more federal agencies are reviewing a project, communication and coordination between/among them are sometimes inadequate.
3. Review of transmission proposals is sometimes given little priority in comparison to the primary mission of the agency.
4. Federal agencies sometimes wait to conduct their reviews until state reviews are completed and a final route has been proposed. This introduces the risk that a federal agency may require a route change, leading to another time- and cost-consuming iteration in the state-level process.

Need for coordination and development of a common review process

All state agencies with review responsibilities, relevant federal agencies, and tribal authorities within a region should use a common review process and coordinate reviews of transmission siting proposals. Inadequate coordination and cooperation among reviewing agencies (and the applicant) can significantly hinder the siting process and may lead to rejection of a project by one or more agencies.⁵⁶

Need to regulate the time allowed for reviews

Many corporate parties to the transmission siting process assert that the unpredictable timing of typical state-based siting processes contributes significantly to the uncertainty hindering key business decisions in the transmission sector today. Many parties favor state and/or federal legislation setting fixed time limits (e.g., 12–18 months) for reviews. Projects not acted upon within the time period would be approved by default. The success of this approach would depend to a significant extent on the filing of a complete application at the outset, and affected agencies would probably enforce “completeness” very strictly.

⁵⁶Examples include AEP's 765-kV line in Virginia and West Virginia, and the Cross Sound Connector project between Long Island, New York, and Connecticut, both of which are described above in the section “Assessment of Current Siting Regime.”

Potential disagreement between states over definition of "need"

One state's definition of "need" for new transmission capacity may include transmission to enable additional electricity commerce; a neighboring state may limit "need" to transmission needed to maintain reliability.

Potential disagreement between states over whether a particular facility is needed

Even if two states have identical definitions of need, they may still not agree that a proposed facility is the best alternative for meeting a specific requirement.

Potential disagreement between states over distribution of costs and benefits

An interstate project may fail to win all required approvals unless the affected states come to agreement about the distribution of the facility's costs and benefits. A key element of disagreement may be the time horizon over which benefits and costs are assessed.

Need for regional institutions to facilitate the siting process for interstate projects

The western states have had extensive experience with siting interstate transmission projects, and an institutional framework is evolving under the auspices of the Western Governors' Association⁵⁷ to aid the states in dealing with such projects. In the eastern U.S., however, interstate projects have been less frequent, and, for the most part, comparable institutional frameworks remain to be developed.

Options for Improving the Transmission Siting Process

The recent debate over whether to make a federal agency, most likely FERC, responsible to some degree for siting major new transmission facilities has been healthy and useful though sometimes acrimonious. It has put all parties on notice that this process must work—it must lead to a timely determination by appropriate government agencies regarding whether proposed facilities are needed and to the approval of routes or sites for needed facilities. The debate has also provided impetus for a searching examination of options for improving the process. Many of these options are listed below.

Options for individual states

1. Promote or require an open, transparent transmission planning process.
2. Require project applications to address a broad range of alternatives.
3. Review and if appropriate clarify or update criteria for approval; consider whether the requirements of commerce should be recognized explicitly in determining "need" for transmission capacity.

⁵⁷The Western Interstate Energy Board, which is the energy arm of the Western Governors' Association, and the Western Conference of Public Service Commissions acted jointly in 1984 to create the Committee on Regional Electric Power Cooperation (CREPC). CREPC has representation from the regulatory commissions, energy agencies, and facility-siting agencies in the 11 states and two Canadian provinces in the Western Interconnection. Through CREPC, the western states have begun negotiations to establish a common interstate transmission-siting protocol.

4. If necessary, modify state law to enable siting authorities to take account of out-of-state benefits when assessing the merits of a transmission siting proposal.
5. Adopt a “one-stop” siting process. Local and county governments could use zoning to direct utility facilities to preferred locations, but they would lose the ability to reject a project. State reviews would be consolidated in the siting authority.
6. Set a maximum time limit (e.g., 12 or 18 months) for reviews by state or local agencies.
7. State clearly what materials must be included in an application, and refuse to initiate a review until an application is complete.
8. Promote use by applicants of both deterministic and probabilistic planning methods.
9. Promote more consistent use of “rolled-in” and “cost causation” approaches to recovering the cost of new grid-related investments, to minimize either favoring or disadvantaging particular technological alternatives.
10. Promote innovative approaches to meeting transmission grid needs.
11. Emphasize to prospective applicants that undue minimization of transmission project costs can be self-defeating.

Regional options

All of the state-level options listed above have regional significance; that is, if they were considered and applied by all states in a given region, the result would probably be greater regional consistency and efficacy in siting policies and practices. The options below focus on development of regional institutions that could, among other objectives, promote such consistency and efficacy. States, federal land management agencies, and Native American tribes should consider the following options:

1. Support and participate in open, transparent regional transmission planning.
2. Promote the development of cooperative regional transmission siting institutions that would have two key missions:
 - (a) Develop elements of a common siting process, usable by most and if possible all reviewing agencies; and
 - (b) Maintain parallel processes among reviewing agencies, utilizing consistent information, identifying information gaps or possible points of disagreement early, and ensuring that these are addressed by a scheduled calendar date.
3. Agree that if an agency fails to complete its review by a scheduled calendar date, the application is approved by default.
4. Consider whether a regional organization with decision-making powers should be estab-

lished to address some energy regulatory matters on a regional basis (i.e., oversight of system planning, siting and permitting, rate regulation, or other matters).

Federal options

Most of the options listed above could be aided through specific federal actions, including:

1. Establish broad federal support for open, transparent regional-scale planning to address generation requirements, generation siting considerations, transmission requirements, and related issues.
2. As an interim measure while waiting for RTOs to be formed and regional transmission plans to be prepared by them, DOE and FERC could act jointly to identify key transmission bottlenecks, and FERC could task administrative law judges to work with appropriate parties in each bottleneck area to prepare an interim transmission plan by a specific date.
3. Improve the process for the review of transmission siting proposals by federal land management agencies. Several sub-options could be implemented by a Presidential executive order:
 - (a) Direct federal land managers and other relevant agencies to support and participate in common and coordinated state or regional processes for timely review of proposals for new transmission facilities requiring federal approval.
 - (b) Require all federal reviews to be completed within 18 months after the filing of a complete application. Applications not acted upon within 18 months would be approved by default.
 - (c) Establish training programs on the national significance of the transmission grids and related issues, and make these programs mandatory for federal officials authorized to approve or reject transmission siting proposals.
 - (d) Create special staff groups in the headquarters of appropriate federal agencies to work jointly to prepare consolidated, multi-agency reviews of proposed transmission projects.
 - (e) Direct that if two or more agencies have jurisdiction over a proposed transmission project, the Office of Management and Budget shall designate one of them as the lead agency, responsible for coordinating the preparation of a timely joint review of the proposal. (Note: An alternative to this arrangement would be to enact federal legislation making FERC responsible for coordination of all federal reviews of transmission projects, as described below.)
4. Seek federal legislation that would:
 - (a) Direct the Secretary (DOE) or FERC to initiate a rulemaking to establish criteria for the identification of transmission bottlenecks (or projects to ease such bottlenecks) of national or regional importance.

- (b) Affirm that for projects designated to be of national or regional importance, an applicant would have the right to petition FERC to assume a backstop role in the event that a state or tribal reviewing agency does not act to approve or deny the project within 18 months after the filing of a complete application. (A stronger but more controversial and less predictable formulation would be to empower applicants to petition FERC when a state, tribal, or federal reviewing agency acts in the allotted time but rejects the application. “Forum shopping” could become a significant problem if applicants could always turn to FERC for a second opinion. If this version were adopted, items c and d below would have to be modified for consistency.)
 - (c) Empower FERC to decline a petition for cause, and limit FERC’s role to serving as a backstop for the agency that has not acted, without affecting the actions or responsibilities of other reviewing agencies.
 - (d) Direct that FERC shall be the lead agency for coordinating all reviews of proposed transmission facilities by federal agencies, that other affected federal agencies shall participate as cooperating agencies, and that the cooperating agencies will retain their existing authorities with respect to the issuance of permits for lines crossing lands under their jurisdiction.
- 5 Undertake a DOE project, jointly with NGA, WGA, NARUC, and other appropriate state-based organizations to articulate a set of “best practices” related to transmission siting for consideration by all states.
 6. Undertake a DOE project, jointly with appropriate state agency organizations and industry trade associations, to articulate a set of guidelines for applicants, designed to increase the likelihood of approval of proposed new transmission or grid-related projects.
 7. Undertake a DOE demonstration program to support applicants in taking innovative approaches to transmission siting proposals (e.g., treatment of alternatives, use of innovative or little-used technologies, imaginative use of mitigating measures, etc.).
 8. Undertake a DOE demonstration program to support the use of new or under-used methods and technologies for increasing the transmission capacity of existing facilities.
 9. Support FERC efforts to improve the incentives of transmission-owning companies and other potential developers of new transmission capacity or other grid-related projects through performance-based regulation.

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